ComputerWeekly
Thursday, March 19, 1981

NEWS BRIEF

Bid for ICL denied

RUMOURS from the city that Siemens of West Germany is making a bid to acquire all or part of ICL have been denied by ICL and by Siemens in Munich. The rumours are said to have been started by "stale bulls", disgruntled shareholders, who bought ICL stock in the hope that it would go up in value.

ICL has revealed that it is in close and regular contact with the government about its "longer term future" adding that Information Technology Minister Kenneth Baker is closely involved in the talks.

£18m contract

GEC has won an £18 million contract to manufacture British Telecom Monarch digital PABX's and has gained type approval for the SL-1LE, the largest of the SL-1 range of digital PABXs made under licence from Northern Telecom of Canada. The company has now sold over 40 SL-1s to customers which include Esso and ICI and aims to export both systems in the future.

Redifon recruits

REDIFON is recruiting about 50 staff to back its activities in the viewdata and office systems markets. The jobs include consultants, systems analysts, design engineers, customer engineers and sales staff for the UK and overseas.

Many at show

DESPITE a £1 admission charge for the first time at last week's Microsystems exhibition and conference, attendance was at its highest level ever — 6,308 visitors, 14% up on the 1980 show. One of the star attractions of the three-day exhibition was Clive Sinclair's £70 personal computer, unveiled to the public for the first time.

National strike called off by Health Service

NATIONWIDE strike action within the National Health Service regional computer centres was avoided last week after the intervention of the government's Advisory, Conciliation and Arbitration Service, ACAS.

An agreement on an orderly return to work has led to most centres working normally, though the Manchester-based North-West Regional centre was still disrupted earlier this week.

The national dispute is over a union claim for between £500 and £1,000 per person for computer staff in the centres to bring their wages up to those claimed for similar jobs in private industry. The main union involved, the National Association of Local Government Officers (NALGO), estimates this would cost £1.2 million a year.

A Department of Health and Social Security spokesman said the management side had offered a total of £700,000, with distribution still to be agreed. At present wage increases are restricted by government cash limits to 6%.

Last Friday Sir Sidney King, chairman of the management side of the administrative and functional committee, the sub-group of the Whitley Council which deals with the wages of computer staff, met fellow functional committee chairmen in a bid to seek extra cash from their areas for the computer sector. The Whitley Council is the forum for management and staff to negotiate wages across the National Health Service.

Lifting the action has meant that cheques totalling £15-20 million across the country have been released for payment. They had been processed by the computer centres but not despatched.

Trouble at the Manchester centre in Prestwich Hospital is continuing because, according to a Nalgo spokesman, the management side had indicated it intends to stop superannuation and holiday entitlement covering the period of the strike. The initial action flared up at this centre after two senior managers "seized" cheques worth £9 million which had been processed but not paid, during a union work-to-rule.

UK lets slip a promising product

by Claire Gooding

THE British micro program development and generating tool named The Last One has been refused funding by Unilever Computer Services (UCSL) and now seems likely to be taken up in the US.

The system, from D.J. "AI" Systems in Ilminster, Somerset, uses techniques based on artificial intelligence to generate programs, asking detailed questions to flesh out an outline which can be designed by a non-programmer at a level similar to flowcharting.

Its claimed ability to relieve programmers of the drudgery of coding and allow them to generate programs from flowchart designs has brought an enthusiastic reception from parts of the software community.

But others say that a program designed to write programs is pitched at too low a level if it still needs flowcharts (as The Last One does) and that, in any case, APL does the same job.

Although it is built on a concept which is very much geared to the present market, UCSL has decided that the business climate is against investment. Its present backer, Scotty Bambury of Eurotyres in Ilminster, has been seeking further funds to get the product commercially roadworthy.

"The sort of money he's asking for isn't the kind of money we wanted to put into the product," UCSL's Alan Jones told Computer Weekly. "The idea's interesting but it comes at the wrong time for us, and after discussion with our US associates, Timesharing Inc and others we decided against it."

However, UCSL has plans of its own to make a similar product available in the mainframe world, and Jones had praise for what the author of the system, David James, was trying to do.

"He's taken a feasible approach, and it's a leap forward from current generators. If it does all the things he claims it does then it's in front of its field.

The Last One has attracted much publicity, partly because of its name and the personal story behind its author, a former millionaire who lost his fortune because of his obsession with computing. But so far, firm interest in marketing it has come only from overseas.

"We would have loved the interest to come from the UK," said David James, "but although lots of people came down to see the system and were over the moon about it, nothing happened. The substantial interest, 99.9% of it, has come from the US,"

Maintenance battle

● From front page

machines, Computron Holland. But the Dutch company's proprietor, Vim van der Beek, is hesitant about dealing with either.

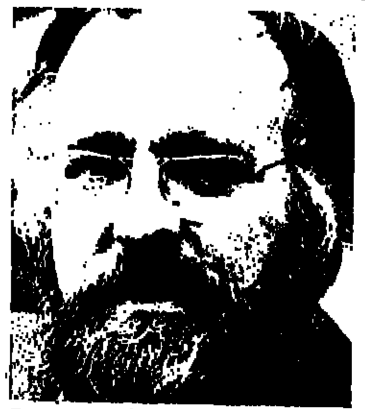
"Radius has approached me but all they want to buy is spare parts and that's not of interest to me," he says.

He added; "I've met Mr Gale but I have absolutely no idea about his background." Van der Beek says he was owed about £70,000 at the time of Scope's collapse.

The only company Computron Holland is supporting is the 50 per cent owned Computron Business Machines, whose other half is owned by former Computron employee Tony Haylock.

Gale has according to Haylock, approached him with an offer to franchise Computron Business Machines for the maintenance agreement for the southern part of the country, an offer Haylock has turned down because, he says, it also involved a commitment to sell 2,500 units a year.

Meanwhile, Gale has entered a trade show, the Numerical Control Exhibition at Wembley on March 30, under the name of Computron UK, a name he says he has registered. The stand was booked through the finance director of Officegate, Mr Buckley.



Panton, chairman of Telecomputing

Control of ECS attempt

BY Keith Jones

BERNARD PANTON, chairman of Telecomputing, was in California early this week atempting to take a controlling interest in ECS Microsystems, his opponent in a continuing legal battle. The California firm has been making moves that could drastically dilute the shares Panton wants to buy.

ECS Microsystems failed in a bid a few weeks ago to freeze Telecomputing assets, its stated aim being to retrieve $450,000 owed by Telecomputing on hardware it supplied for the firm's TECS 4050 microcomputer.

Telecomputing is suing ECS Microsystems in California for $12 million, alleging that the kit was faulty and also charging ECS with breaking Telecomputing's exclusive distributorship for ECS machines in Europe.

WP firm for Ireland

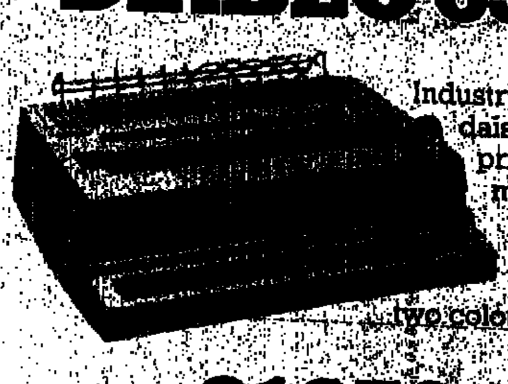
by Rory Johnston

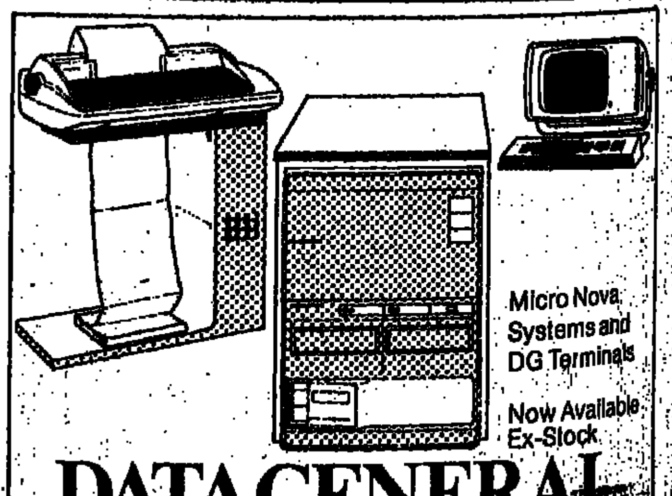
US word processors are to be built in Ireland following the takeover by Minnesota manufacturers CPT of the minicomputer plant abandoned by Northern Telecom. A desire to serve better the booming European market is given as the reason for the move by CPT president Dean Scheff, who predicts turnover of $100 million for 1981, up from $60 million in 1980, 30% coming from overseas.

The plant in Ballincollig, County Cork, used until January to build Data 100 minis, will employ 50 people initially, many of these from the laid-off Northern Telecom staff. The Irish Industrial Development Authority encouraged CPT's takeover with tax incentives, equipment grants and training.

At the same time CPT has announced upgrades to its two models of stand-alone word processor, consisting of extra memory and additional software facilities such as mathematics functions,. In addition to these higher-priced options a low-cost printer will be offered later this year.

The Cork plant will be CPT's first overseas, and one of the first for any of the specialist US word processor manufacturers. CPT is especially strong in Europe because it has a marketing arrangement with CII-HB in France; 17 different language versions are offered.





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£200 million guarantee puts spotlight on board

Top changes soon at ICL

by Keith Jones

CHANGES in top management at troubled ICL now look fairly certain following the government's decision to keep the company's head above water by guaranteeing an extra £200 million worth of loans from ICL's main bankers over the next two years. ICL has already taken up most of its existing £70 million worth of bank loan facilities.

Commenting on the government's move, Information Technology Minister Kenneth Baker hedged questions about the government's guarantee being conditional on management changes at ICL. He pointed out that the terms of the guarantee were confidential, but admitted that the ICL management was being "watched".

Announcing the government help in the Commons, Industry Secretary Sir Keith Joseph used the government's position as a big ICL customer as his justification for the move.

He commented, "To protect this special interest we have, therefore, given a positive response to a proposal that the government should give a limited temporary measure of support for ICL."

He added, "Such a guarantee will not lead to any public expenditure unless it is called. I emphasise that it will be a limited amount and for a limited time."

Reaction in the City to the government action was distinctly cool. ICL's share price fell to 38p from the 46p price when trading was suspended just before the announcement. A spokesman for Sperry Corp in New York said that he had "no knowledge" of a reported 60p per share takeover bid by Sperry Univac before the government made its statement.

Welcoming the loan arrangements, ICL said that its bankers — Midland, Barclays, National Westminster and Citibank — had agreed to increase their existing facilities to £270 million for up to two years.

In its statement the company added that it was "unusually difficult to look ahead" but repeated chairman Philip Chappell's prediction at the ICL annual meeting that losses in the second quarter of the current financial year would be less than the £20 million loss in the first quarter and that the company would break even in the second half of the year. But Chappell admitted that this improvement would depend on there being no further deterioration in demand.

In the discussions in the Commons that followed Sir Keith Joseph's statement, shadow Industry Secretary John Garrett welcomed the decision but said that limited, temporary support was no substitute for a policy and a plan for information technology such as the French or Japanese had.

Referring to the present government's disposal of the National Enterprise Board's 25% holding in ICL last year (which raised over £30 million at 120p a share), Garrett commented: "It is now clear that the sale of ICL shares by the NEB on government instructions was misguided, since ICL is now back in the situation where it is suitable for the NEB to take it over on the present government's criteria for a rescue by the NEB."

Mainframe handling of Eurobond deals at Chemical Bank's London base will be switched wholly to micros under a powerful multi-user scheme now being considered.

NEWS BRIEF

DP staff still on strike

INDUSTRIAL action continued at the North Western Regional Health Authority computer centre at Prestwich Hospital in Manchester this week, despite a return to work elsewhere in the country. About 50 of the 100 DP personnel at the centre are still on strike after colleagues at the 14 other regional computer centres agreed to work normally.

They are in dispute over a claim by computer staff for parity with wages in the private sector.

64K RAMs sold

SALES of 64K dynamic RAMs are getting under way with an order from Control Data for $1 million worth from Fujitsu and Motorola. The 50,000 units are to be supplied in two halves by the two companies.

Agreement

THE office division of Northern Telecom is increasing its presence in Europe through an OEM agreement with Redifon/CMC.

Bank switches to micro dealing

by Claire Gooding

A CITY-BASED international bank is running its Eurobond trading operations on micros, under the multi-user Famos operating system, and intends to use them to replace its IBM mainframe.

As deals are confirmed, the system gives information on yields, profits and losses. The details of a deal are then transmitted via a time sharing network to the clearing office in Europe and other branches as far afield as Hong Kong.

After searching for a real time system to cope with front-office operations, Chemical Bank International plumped for the Famos-based system from Microtek in Orpington. With co-operation from the bank, Microtek produced the system to be up and running in six weeks, it says.

"We find it excellent," said Bob Fuller, head of the DP task force at Chemical Bank. "There's even a possibility it will be marketed outside as a Eurobond system. I believe it is the most advanced Eurobond trading system currently available; it does everything we want it to and more."

The back-office system will deal with the clearance and transference of all monies traded during the day, and will link with the automatic clearing bank systems Euroclear and Cedel.

Privacy law confusion

by Rory Johnston

A MIXTURE of relief and bewilderment was the reaction of the computer industry to Home Secretary William Whitelaw's announcement that the government had accepted in principle the need for data protection legislation. His statement however left many questions unanswered, such as how the proposed codes of practice and registry would be policed, and when legislation might be introduced.

Whitelaw was specific that there would be no Data Protection Authority, because of the cost involved for both the private and public sectors. There would be a public register, he said, on which users of automatic systems would have to enter themselves, as well as having to "comply with other requirements".

At the same time a working party of the Computing Services Association has recommended that an even simpler system of privacy protection for individuals be introduced, entailing the minimal legislation required to satisfy the Council of Europe's convention. This would give individuals the right to sue for breaches of privacy and have the Ombudsman investigate complaints against the public sector.

A register would not be a good thing because of its cost and the danger of its being used with criminal intent, said committee member Magdalena Gardner-Brown of Comtact. Manual files would be included in the laws proposed by the DCA, which is worried about other countries using data protection as a non-tariff barrier to trade.

● Turn to back page

Technology snags delay IBM discs

by Keith Jones

A SERIOUS shortage of large-scale disc subsystems for capacity starved IBM mainframes will be the most dramatic effect of a delay of up to eight months in the first shipments of IBM's 1200 megabytes per spindle disc drive, the 3380.

No doubt wanting to pre-empt rumours about its problems, IBM has come out into the open by making a statement about the delay.

IBM in the UK said that a new delivery schedule would be announced in the third quarter of this year with the first shipments now probably taking place in the second quarter of 1982. They were originally intended to start in the 1981 third quarter.

But IBM gave no idea of the precise nature of the problems, except that they concerned the 3380 hardware.

IBM admitted, "We have problems like everyone else."

Industry speculation centres on the technologically innovative parts of the 3380, in particular the "thin film" copper coil read/write head being developed at IBM's magnetic recording products centre at San Jose, California.

Initial 3380 shipments in the US were originally expected to start about now, but have been delayed to the fourth quarter of this year.

Plug-compatible disc subsystems supplier Memorex is expecting the 3380 delay to boost demand even further for its 3652 drive, a double density equivalent of the IBM 3350. Orders for the 3652 leapt last year after uncertainty among users about IBM's plans were cleared up by the 3380 announcement.

Mike Kitching, managing director of Memorex UK, described demand for the 3652 now as "fantastic". At the same time he warned of a resulting six-month delay in 3652 shipments.

INSIDE THIS WEEK'S ISSUE

Dictaphone challenges IBM and Xerox in UK office systems market

by Rory Johnston

DICTAPHONE has had its first impact in the UK, since joining the ranks of firms battling for the office systems market, with the launch here of the Dual Display word processor, an up-market machine with several novel features.

With this the parent company Pitney Bowes is combining Dictaphone's marketing set-up with the technical capabilities of its other acquisition, Artec, in an attempt to form an office systems force in the same league as Xerox and IBM.

The Dual Display, a development of Artec's single-line model, has a full-page high-resolution screen that is capable of displaying justified text, a revolutionary feature. A single-line display is also incorporated in the separate keyboard, and on this all control codes are shown in order to keep the screen free of all information that will not actually appear on the finished piece of paper.

It is also possible to add extra keyboards without screens to a system to provide more input capacity at relatively low cost. Up to four screens and eight keyboards can be clustered together.

When a full page of text is displayed the characters are fairly small, so a "zoom" function is provided to stretch them to twice the size vertically. Each character is depicted by a dot matrix of varying size according to the character's width, so proportional spacing is available on the screen. Justification is done when the line is complete.

Software for records processing and mathematical functions is available, and a form of user programming is provided to allow frequently used sequences of operations to be stored and executed automatically.

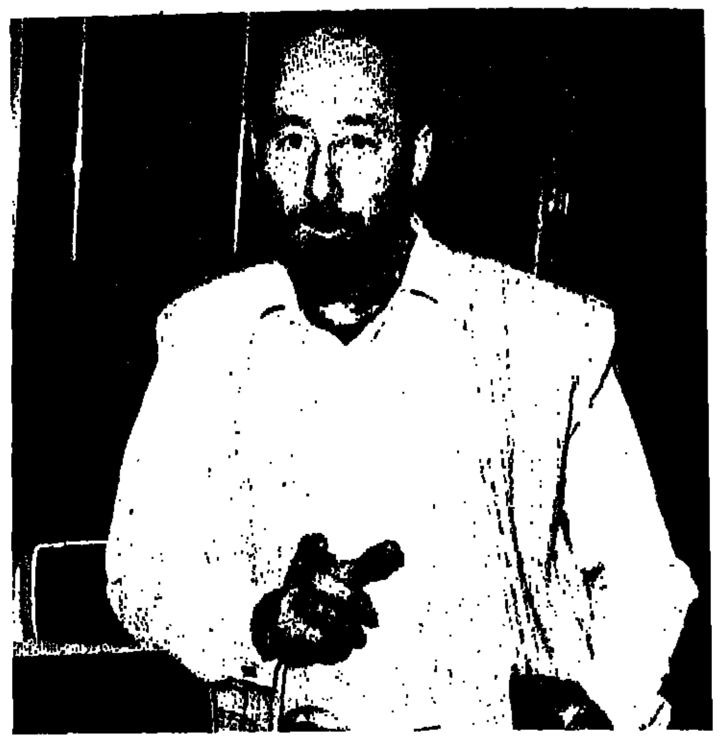
There is an extra-cost option called "Concurrent Processing" which enables editing, printing, and internal operations such as sorting all to be carried out at once. Communications is another option.

Prices are relatively high, with a single-screen unit costing £8,512 and a dual screen £10,144, but Dictaphone is not going the way of Wang and IBM with their low-cost machines in eliminating most support. Training and software updates are included in Dictaphone's prices. An extra keyboard costs £1,300. Twin eight-inch floppy discs are used, providing 450 K-bytes on each.

Bill Cottle, American head of Dictaphone UK, said that handling so much of the input to word processing already, with 70 per cent of the centralised dictation market, gave the firm a major advantage getting into the complete office systems business.

ICLs for Aussie

AN Australian engineering company has ordered three of ICL's new 2955 machines in a deal worth £750,000 to ICL. J. Blackwood and Son chose the 2955s to replace its old System Ten stock control and order entry system.



Dick Drinkrow, general manager of CSD: "Trying to bring computerised production control within the reach of small manufacturers".

Selling specialised systems

by Claire Gooding

TWO products were launched last week from a small systems company which has been steadily gaining strength in the manufacturing and production field. CSD, whose Impcon and Fincon packages are already widely used, announced Subscript, a subscription accounting system for publishers and mail-order subscriptions, and Pincs, a real time warehouse system which manages physical space allocations.

CSD sells specialised systems not to end users but through hardware suppliers and distributors.

Products such as Pincs, which costs from £15,000 to £18,000 are aimed at specialised mini markets using Digital Equipment and Nixdorf kit.

"What we're trying to do," said general manager Dick Drinkrow, "is to bring computerised production control within the reach of small companies who have never used computers."

NEWS BRIEF

BT buys £1m Honeywell

HONEYWELL is to supply £1 million of Level 6 minicomputer systems to British Telecom for three separate stores, repair and forecasting services. To be equipped with the PTS 6 transaction processing system, they will be used for key item monitoring (KIM), for the administration of repair service controls by computer (ARSCC) and for the forecasting of ordering requirements and transmission expenditure for long lines (Foretell).

System X sample

MAGNETIC bubble memory support chips that will be used in System X the totally digital telephone exchange, have been sampled by Plessey after a major redesign of the chips. The quad sense amplifier, SB9001, and the quad write driver SB9002, for bytewide magnetic bubble memory systems are to be used in 256K bubble modules.

Innsite order

THE hotel industry systems company, ADP Hotel Services, just set up by ADP Network Services has announced the first multiple order for its Innsite package. The customer is Commonwealth Holiday Inns of Canada which is equipping nine hotels in the UK with Innsite systems based on the Rair Black Box microcomputer.

Apple III lookalike launch

By Eileen Steiner

THREE ex-employees of Commodore International have set up a new company in California to manufacture small business computers. The first product will be similar to the Apply III, the company claims, and a prototype is scheduled for next month.

The company, called Sirius Systems Technology, is headed by John Paivinen, a founder of MOS Technology which became the in-house semiconductor operation for Commodore in 1976.

Vice-presidents of the venture will be Charles Peddle and Christopher Fish who left Commodore at the end of last year.

Funding to start up the company in its 4,000 square foot leased facility came from the three executives. More is being sought for a 45,000 square foot manufacturing plant.

The Apple III has recently been the centre of criticism from some industry speculators. It has been classed as expensive compared with others in the same market category.

DP exports lead to UK's trade recovery

SHARPLY increased exports of computer equipment last year led to Britain's favourable trade balance with Western Europe of £240 million last year. That is up from £94 million in 1979.

Exports to Western Europe leapt from £654 million to £803 million while imports stagnated at £562 million for 1980 – just £2 million more than the year before.

As shown in the table the EEC countries account for the lion's share of visible trade and showed the most growth in exports and the only area to fall among imports. But "Other West Europe" – which means Norway and Spain – also showed a steep rise as a market for British exports of electronics and computers.

Electronic computer equipment, as described in British Overseas Trade Board statistics, includes digital, analogue, hybrid, peripheral and data transmission equipment, but excludes software and computers for machine tools. It also does not include electronic components.

European Free Trade Area (EFTA) countries are Portugal, Austria, Switzerland, Sweden and Finland (as an associate member).

Commenting on Britain's visible trade as a whole for the two years, Sir Derek Ezra, chairman of the BOTB's European Trade Committee said: "For the first time in a decade, our overall visible trade with Western Europe was in surplus by over £500 million in 1980. Compared with a deficit of nearly £4 billion in 1979 this was a significant improvement . . . . representing an increase in exports of about 19 per cent. Imports by value remained at almost the same level as 1979, largely due to the depressed state of industry in the UK in 1980."

The UK's visible trade balance in 1980 in electronic computer equipment showed a marked improvement on the year before.

	1979 (£m)	1980 (£m)
Imports:		
EEC	508.8	472.9
EFTA	42.7	47.2
Other W Europe	8.4	41.9
Total:	559.9	562.0
Exports:		
EEC	556.8	640.0
EFTA	77.3	82.8
Other W Europe	20.1	80.8
Total:	654.2	803.6
Balance	+94.3	+241.6

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Cash stopped as computer staff disrupt Inland Revenue and high street banks – report from Nicholas Enticknap

Bank employees fight tax department attempt to thwart internal strike

THE Inland Revenue's attempt to thwart the civil service unions' industrial action at its two cheque processing centres at Shipley in West Yorkshire and Cumbernauld in Glasgow has met with resistance from bank employees.

The Council of Civil Service Unions has obtained the assistance of the Banking Insurance and Finance Union (BIFU), which has authorised its members "to take action to black transfers and debits to the relevant account numbers".

The issue arose when the CCSU, as part of its programme of industrial action in pursuit of a 15% pay claim, instructed members at the tax centres to come out on indefinite strike. This meant that cheques sent by employers to the centres would not be banked, with a consequent loss to the Inland Revenue of the interest on an average £600 million a week for the duration of the strike and a squeeze on the government's cash flow in the meantime.

The strike was timed to begin in a week where the revenue would be much greater than the average figure, as most large employers pay their tax bill monthly on the 19th of the month. The Inland Revenue retaliated by notifying employers that they had the alternative of paying via the Post Office or National Giro.

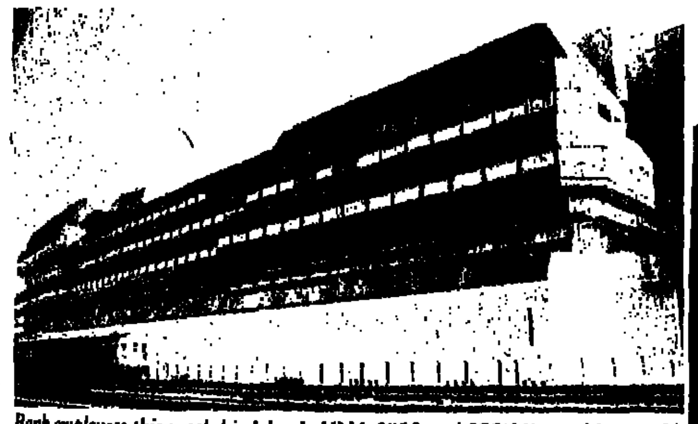
In normal circumstances companies despatch cheques direct to local tax collection offices for onward transmission to Shipley or Cumbernauld, but many employers are known to have taken up the other options last week.

BIFU has now stepped in and instructed its members, both at bank branches and the Clearing Banks' centre at Edgware, to stop any cheques made out to the appropriate Bank of England account numbers. Union officials confirmed that some such cheques were in fact stopped last week.

This action by BIFU should increase the cash squeeze on the government, and so bring a settlement of the civil service unions' dispute, now in its third week. Other computer installations affected by the action include the VAT centre at Southend.

Sir Geoffrey Howe, the Chancellor of the Exchequer, said in Parliament this week that a substantial proportion of the Government revenues had already been received.

Civil service pickets outside the Inland Revenue's offices in Bush House, The Strand, London last week were attempting to prevent tax cheques being delivered there.



Bank employees this week hit Lloyds IBM 3033 and 370/168 machines at the new Sampson House, Blackfriars computer centre in central London.

One-day stoppages at Lloyds and Barclays

STAFF at Lloyds Bank and Barclays Bank computer centres were planning 24-hour strikes this week in support of a pay claim.

The staff are members of the Banking Insurance and Finance Union (BIFU), which last Thursday rejected the 10% rise offer made by the clearing banks. The union has originally asked for 20%, and said it would not accept less than 13% or 14%.

Action centred on clerical staff loading cheque sorters, but they were supported by some DP workers also.

BIFU also announced last week that its members would be supporting the civil service unions' industrial action by refusing to handle payments to the Inland Revue and Customs and Excise normally-handled by civil service unions staff (see story above).

The stoppage at the banks' computer centres was designed to have a minimal effect on the general public, but will nonetheless have been noticeable. The strike at the Lloyds centre, which started at 10pm on Monday, put some online Cashpoint cash dispensers out of action, while at both banks the processing of debits and credits will be delayed for a few days.

After the last similar strike by the union, at the Midland Bank two years ago, it took three days to clear the backlog of work, and on that occasion a settlement was quickly reached. This time it seems unlikely that that will happen, and preparation for further subsequent industrial action, including an overtime ban and a work-to-rule as well as other one-day strikes, is already well advanced.

The computer centres involved are the Lloyds Bank installation at Blackfriars in London, where there are more than 2,000 staff in all, 1,000 of whom are BIFU members; and two Barclays Bank installations at Gloucester and Wythenshawe, which have 280 staff, of whom 200 belong to the union, and which are due to be on strike for 24 hours from 4 pm today (March 26). According to a BIFU spokesman, the installations process between them about 16 million transactions a day.

In a statement last week the joint chief general manager of the Midlands Bank, Stuart Graham, who is also chairman of the chief executive of the Committee of London Clearing Bankers, said: "In the present economic circumstances, we regard our offer as more than reasonable. Our own domestic profits are now on a clear downward trend . . . If we were to pay any more to our staff, we would inevitably have to pass the costs on to our customers, many of them industrial companies who are having to make far lower awards to their own employees."

Dutch Gas chooses Logica

MONITORING of the Netherland's natural gas pipeline network is to be switched to a Logica-developed system under a contract worth about £1.2 million, just signed by Logica (Benelux).

The deal involves the software company's Remote Plant Monitoring Package, which will be enhanced in Pascal to run on dual DEC VAX 11/780 machines. It will watch over some 10,000 km of pipeline delivering gas throughout the Netherlands, and to West Germany, Belgium, France and Italy, for the gas company Nederlandse Gasunie.

Due to go live in 1982, the system being built in Rotterdam is designed to collect and process 6,000 analogue values and 18,000 data points. Operators will monitor and control the pipeline network on 12 high resolution colour graphics displays showing pipeline mimics and status messages.

Message for London seminar on compatibility

'No need to buy IBM products to adopt SNA'

by Donald Kennett

IBM users will have to adopt IBM's Systems Network Architecture eventually, but will not have to buy IBM products exclusively to do it. That was the message last week from Saroj Kar, president of California-based consultancy Telecom Computer Technology, at a four-day seminar on compatibility with SNA, held in London by TCT and Interco Business Consultants of Richmond, Surrey.

The impetus would come from the attractiveness of IBM's application software, the elegance of its network management techniques and the fact that users were offered a complete system, tailored to their industries – for example banking, airlines, insurance and supermarkets.

Users had huge investments in getting applications working that they wanted to protect, said Kar. They would be offered a smooth migration path to SNA over the next four years or so, but support for simple start-stop and bisynchronous terminals would be dropped from future releases of system software such as VTAM, which enables terminals to access application programs running in a mainframe, and the NCP network control program which runs in communications controllers.

SNA-compatible terminals or cluster controllers would then be required in order to work with the system.

Most medium to large manufacturers of computer and terminal equipment were now putting some effort into emulating an IBM cluster control product, such as the 3274, and by 1984 he expected many manufacturers to be offering such emulations on the market. Telex, Nixdorf and Harris had announced SNA-compatible cluster controllers in the last year.

Univac, Honeywell, AT&T, Texas Instruments and Northern Telecom Systems Corp were all developing products to work with SNA, just as plug-compatible manufacturers had learned in the past to design for compatibility with IBM systems.

Even an occasional need to link to an SNA system was enough to justify developing SNA-compatible products – for example, if a chain of hotels using Univac's Distributed Communications Architecture wanted to receive bookings from an airline's SNA-based reservations system.

By the late 1980s we would see products on the market that fitted in with the ISO structure for open systems interconnection, but in the meantime software products from independent companies would have small numbers of users compared with IBM products.

"IBM is saying loud and clear that you will only be safe with SNA if you use IBM products alone, but we are saying you don't have to," Kar concluded.

US information policy doubts

by Rory Johnston

UNCERTAINTY is clouding the future of all information policy and regulation in the US, following the arrival of Ronald Reagan and his administration's preoccupation with cutting public spending. No replacement has yet been found for Henry Geller, head of the National Telecommunications and Information Agency, and Geller's ambitious plans for a national information policy look likely to be forgotten.

There is even a possibility that the NTIA could be converted from being part of the Department of Commerce into a small office in the White House, from where it was moved by President Carter; or it could be abolished altogether.

Meanwhile its Bills on privacy and telecommunications have been dropped, and such issues as whether AT&T should be prevented from offering data processing remain unresolved.

The multi-front fight between the banking giant Citicorp and ADAPSO, the computing services association, is proceeding slowly, with a federal court and the Controller of the Currency waiting for the outcome of hearings before the Federal Reserve Board in May. ADAPSO is accusing Citicorp of competing unfairly in providing DP services that are subsidised by its banking activities.

Counter-charges by Citicorp, that ADAPSO was trying to restrain trade by a "sham anti-trust action", were thrown out by the federal judge.

ADAPSO has recommended to the White House that Hugh Donoghue of Control Data, be made head of the NTIA, to give the agency "a practical understanding of industry," in the words of the president, Jerry Dreyer. Disbanding the NTIA would be "a terrible mistake," Dreyer said.

Meanwhile the 325 civil servants there have little to do, apart from advising on cutbacks to the funding of public television.


Bell Canada's Displayphone.

Voice/datacom trial

BELL CANADA has introduced a desk-top unit that handles both voice and data communications. The Displayphone, as it is known, will be tested at about 250 North American business sites later this year.

The basic unit consists of a seven-inch black-and-white display, a telephone handset and two keyboards.

Bell Canada officials say that, given favourable reactions from the field trials, it may begin selling the unit during 1982.

The Displayphone allows the user to make calls on two separate lines. Both lines can handle voice communications, while only the second can handle data communications, via a built-in 300 bps modem coupler.

The unit has two keyboards. One is directly in front of the display screen, and the other is concealed on a slide-out drawer. The first has a standard 12-key telephone pad, eight function keys and five programmable keys. The slide-out 55-button keyboard is used for data entry.

The Displayphone has 8K-bytes of random access memory and 32K-bytes of read-only memory. The RAM stores information entered by the user, including up to 81 telephone numbers. The unit also contains its own battery, so that memory is retained during power failures.

Extras include auto dialling, last number re-dial, a calculator function, clock and calendar display, and call timing. The Displayphone can also accept peripherals, such as printers and cassette recorders.

Linking up 64 micros

by Eileen Stainer

A MULTIPLEXER for microcomputers that can tie together from two to 64 systems into one multi-user multi-function system has been introduced by Corvus Systems of California.

Called Constellation, the multiplexer allows each microcomputer to access disc storage as if it were the only one connected, even if all the micros are in use. Maximum storage with a fully implemented network is between 10 and 80 megabytes.

Constellation can be used with most microcomputers available on the commercial market.

Prices for the multiplexer begin at $750 with an eight-computer network and each interface after that is about $250.

Pets rule at Inspex show

by Chris Youett

PET-based-systems dominated the Measurement and Inspection Technology Exhibition in Inspex 81, held recently at the National Exhibition Centre, near Birmingham.

Two of the systems on show were based on Pets that had been repackaged, with Commodore's blessing, to avoid looking like a computer system in an effort to reduce shop floor resistance to using them.

The first system was a statistical measuring unit made by Machsize of Kenilworth. It cost £6,500 for hardware and £500 for software which could be tailored to customer requirement.

The Machsize system had a real time printer, 32 channels, command keys, custom design interfaces and built-in analogue to digital converters.

Vernon Instruments has repackaged a Pet into a gauging system that could measure up to 20 dimensions on a work piece. The software was programmed in Basic and had three tests for the piece: pass, fail or rework.

The keyboard could be detached and a graphics printer was optional, the repackaged Pet costing about £10,500.

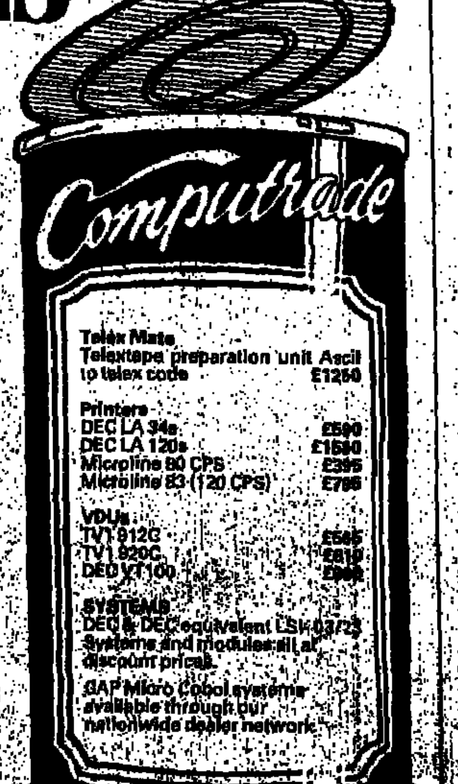
A menu-driven Pet-based calibration system from the National Physical laboratory gauges work pieces up to one millionth of an inch, with software running on either magnetic tape cartridge or disc. It costs about £1,000 for the hardware and £250 for software.

Unit Inspection offered a Pet-based service for tube inspection done on the client's premises. The system works on the basis of analysing eddy currents.

Advanced Metrology Systems exhibited a precision measuring system based on a Pet checking dimensions down to one millionth of an inch.

The Pet interfaced to a surface measuring instrument via a gauging interface, the system costing between £600 and £3,000

Systems based on Computer Associates, Data General and Hewlett-Packard kit were also exhibited.



Digico moves into the desk-top micro market

by Keith Jones

BUOYANT UK minicomputer manufacturer Digico has moved into the desk-top microcomputer market with Prince, a Zilog Z80-based single screen machine running under the ubiquitous CP/M operating system. Priced between £1,500 and £4,500, it can operate in standalone mode or as an intelligent satellite to a Digico minicomputer, taking advantage of its large scale database.

The Prince launch is one of three major current events in the life of Digico. The other two are the opening of a new 42,000 square feet Northern headquarters in Leeds and the raising of £2 million additional capital from a private share placing by its holding company, Spanverne Investments (see Company News, page 11).

Spanverne managing director Ken Atkinson, said the money would be used for acquisitions, with peripheral manufacturers and service bureaux of most interest.

Prince slots into the Digico product line between the Regent VDU and the Consort, the smallest of the company's 16-bit machines.

Atkinson said that several microcomputer dealers were already interested in handling it, and pointed out that the complete Prince package included Cobol, Basic, PL/I, Pascal and database software on the systems side plus a full range of applications packages for both general accounting and solicitors' accounting.

To maintain the machines Digico is offering a facility called Minimum Interruption Plan which will operate somewhat like the service for a rented TV, according to Atkinson. If a Prince machine goes down it will be replaced.

Atkinson emphasises the importance of Prince as a satellite to a bigger Digico system. He said that Digico had developed a protocol that enabled the CP/M file handler on Prince to communicate with the file handler on the Digico M28 system. He envisaged a network of Princes linked to an M28 and running most of the user's applications programs while the M28 acted as a large scale database system.

Bureau buys Rair time sharing

COMPUTER bureau Allen Computer Services of London has acquired the time sharing business of Rair, developer of the Black Box range of microcomputers. The move comes after a high growth in sales of the Black Box for Rair and allows the company to concentrate on this area and the new growth area of terminal products.

Dealers are being appointed countryside by Rair to handle end user marketing of the Black Box series, including the latest Black Box III line. Dealers will be able to offer customers facilities like the Rair Rental Scheme. This scheme provides rental contract periods of up to 12 months.

ASSET will keep watch on cost accounting assets

by Eileen Stainer

FIXED asset accounting is the theme of a new software package for the IBM System/34 user, available from Interactive Database Systems based in London.

Called ASSET/34, the program completely supports all requirements of SSAP12 for historic cost accounting and SSAP16 for current cost accounting.

The system comprises a vehicle detail file which gives out reminders of taxing, plating, MoT testing and the like and produces a full range of analysis reports.

It also includes a property register which gives printed information on rent review, insurance and other reminders.

A finance file provides details of all financed items with agreement details and standing order amounts.

ASSET/34 is being installed currently in nine organisations, one with 20,000 assets to control and the company expects to release a version for the System/38 shortly.

Similar to IDS's market leader financial planning and general ledger system package called INSIGHT, the ASSET package has 'prompt' displays and dispenses with the need for the user to have computing knowledge.

ASSET/34 interfaces with INSIGHT to provide a totally integrated management information system.

Spreading the work

by Claire Gooding

HIGH STREET Jobcentres are speeding the task of matching applicants with the right vacancies by using a message switching system to spread the word about jobs as they become available.

Five Jobcentres in London, Birmingham, Liverpool, Newcastle and Glasgow are now using Perkin-Elmer message switching systems, which were originally installed as an interim measure while the now defunct Capital mainframe system was being developed.

Firms with vacancies to fill can now contact their local Jobcentres with the details, which are entered immediately on a terminal, with codes indicating where else in the area potential employees might be found.

In the relevant local Jobcentres, which might be anywhere else in the UK, the details are printed directly on to a card which is then pinned on the board for job-hunters to find.

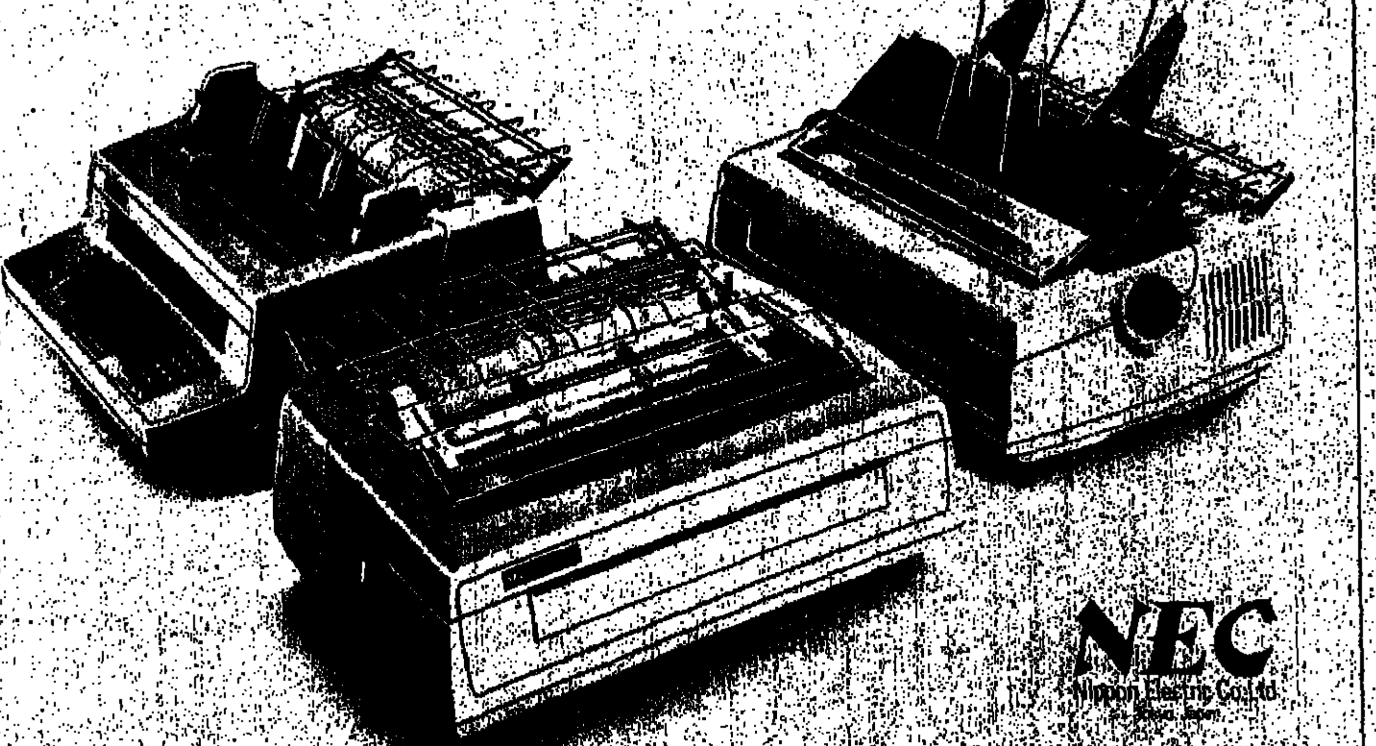
"It brings more vacancies to a wider range of applicants, and for employers the net can be cast wider in the search," explained Andrew Hemmings of the Employment Service Division of the Manpower Services Commission. "It's a faster service to both employer and job seeker."

Instant Arabic from CPT

CPT has sold Arabic translation on a word processing system to translation agency Tek Translation in what the company claims is a first for the translation market.

An £80,000 order has been placed for 17 word processors and attendant printers plus multi-lingual software in 10 languages other than Arabic.

Screen editing will be done by various operators in their own languages with final copy fed directly to film-setting equipment. Tek also intends to transmit copy to offices in Hong Kong and Houston as first stage towards establishing a worldwide network.



Donald Kennett reports on last week's conference on a Prestel service that is due to start up in the UK next year

Data collection likeliest for viewdata gateways

DATA collection is currently the favourite application proposed for gateways from public viewdata services to third party databases, although they can also allow access to other services which it would be uneconomic to provide on Prestel's own computers.

At last week's conference on Prestel's Gateway organised by Systems Designers and British Telecom, Simon Wilders, the software engineer responsible for implementing Gateway, spoke of the "transformation" of Prestel from an information retrieval service to a data collection service.

And Ludwig Griebl of the Deutsche Bundespost, which initiated the provision of gateways on public viewdata, said that 80% of the frames on the third party computers connected to the Bildschirmtext viewdata service were designed for data collection.

SDL's information systems manager Alan Haimes said the economic justification was often stronger for data collection than it was for data distribution.

Prestel research chief Keith Clarke said that the bulk of international debate had centred on display techniques and the terminal transmission scheme, on whether character attributes should be coded serially or in parallel, but that was not where the main problem lay. They lay in the computer network and the database structure, because people were going to make their money through quick and efficient access being available to their information.

British Telecom had been unimpressed by minor improvements in display quality made in some other countries, but had been impressed by Bildschirmtext's gateway. Application areas would include highly-interactive services, rapidly changing information, capture and vetting of data in volume, extremely large databases and in cases where there were complex security requirements.

Advantages were that billing was taken care of, casual customers could be attracted and the network was in place to give local call access from most of the country.

He outlined plans for its introduction. By the end of the year, tests would be run with the first guinea-pig (or pioneer) gateway information providers. Their services would be available by next March. They would be attached via the PSS packet network to a Prestel centre having a light load but a large number of local users.

Kornelia Rübcke of Verbraucherbank used her own bank account to demonstrate facilities offered by the bank to customers with viewdata terminals. She has also allowed SDL access to it in the past — it is so much more authentic than a dummy account — and David Gilbert said he had once cancelled her standing order to the gas company during a demonstration.

In a second phase starting in the middle of next year, gateways would spread through the country along with Prestel's new advanced network, Panda. The chief merit of the current network was that it had been set up quickly. Panda would make it easier to introduce new facilities, such as Gateway and a message service.

It would enable operating costs to be reduced by getting away from the present labour-intensive archiving methods and it would make it easier to take advantage of new technologies, such as packet switching, video-disc data archiving and Cambridge Rings or other local networks.

These were useful for connecting a number of computers together in a flexible way.

Third party database operators would have to implement X25, so as to attach to PSS, and the BT protocol designed for the German system, which was equivalent to the top four layers of the ISO open networking scheme, so as to provide the required user interface.

SDL's David Gilbert said that the BT protocol had been designed in modules related to the ISO networking scheme, so that as standards emerged for each layer the modules could easily be changed to comply with them.

Some parts of the protocol might be extended in future to cater for a wider variety of application requirements, including for example a computer-initiated dialogue.

SDL's Haimes said companies were likely to take at least six months to implement a service on Prestel's Gateway, even with the availability of software products to handle the X25 and BT protocols.

SDL planned to hold workshops on third party database operation at its Camberley headquarters. One-day planning workshops costing £150 a head were scheduled to start next month and two-day design workshops, costing £350, in May.

Prestel research chief Keith Clarke

Ludwig Griebl from Deutsche Bundespost.

Room for more next month on West German viewdata

FROM next month a greater number of West German companies will be able to offer viewdata services on Bildschirmtext, when connections from private computers to Bildschirmtext gateway centres start being implemented via Datex-P, the West German public packet network, instead of via leased lines.

Ludwig Griebl from Deutsche Bundespost said that the full public service of Bildschirmtext would not start until 1983 and it would be different in many ways from the current version. The next generation of character-coding methods was still being discussed and some of the higher level protocols for open systems interconnection would probably be defined by then.

Implementation of the public service would be put out to international tender by the end of this year.

Despite the wait and the changes, it was still worthwhile for a company to set up a service, Griebl thought, as they would gain experience of designing and operating a system and would not have to change the applications themselves for the full public service.

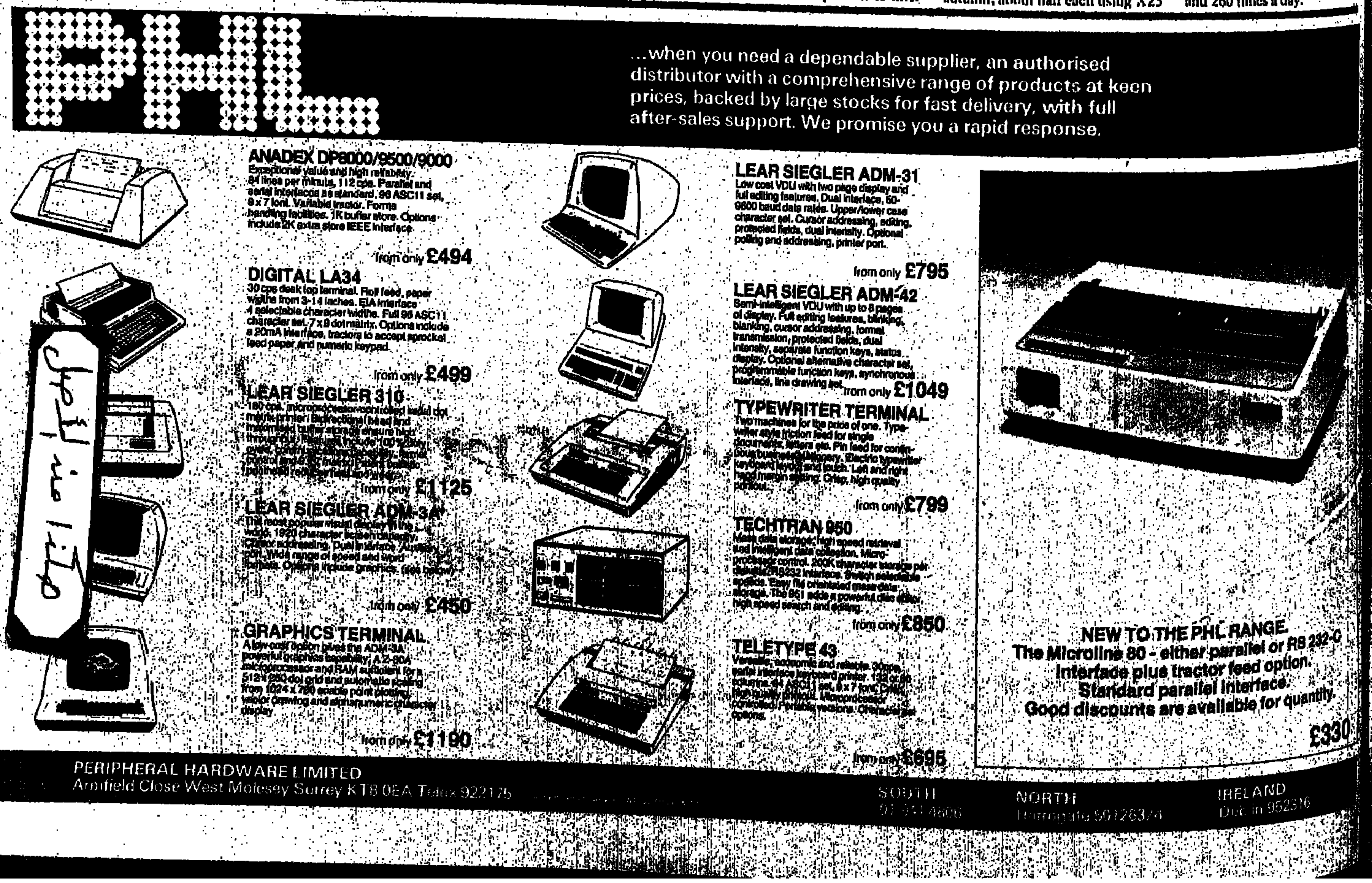
Packages were already available from IBM, Philips and Siemens, he said, to handle the communications side, implementing the BT protocol with the X25 or the IBM 3270 line protocol.

Griebl's paper listed seven banks which offered or planned services, three having announced their plans in the last month. A total of 27 organisations would be linked to the gateways by the autumn, about half each using X25 and 3270. One organisation plans to offer correspondence courses from June onwards.

Peter Köhn, data processing manager of Verbraucherbank, said his bank would extend support for Bildschirmtext-based services to all towns in Germany with populations over 200,000 and would add extra facilities such as home-based trading in stocks and shares.

The bank, he said, already allows its 40,000 customers to control their accounts via Datasaab Alfaskop terminals in all 12 branches, which are accessible day and night in booths opened by magnetic-card keys.

A wad of statistics provided by the bank showed that its 1,000 customers able to control their accounts via Bildschirmtext had accessed the system between 120 and 260 times a day.



by Claire Gooding

IBM has boosted RDBMS with its query language. Software File looks at a system that uses it, and at others

'Truly relational' Oracle uses SQL/DS language

IBM'S endorsement of the relational approach to database management with the announcement of SQL/DS has meant a boost for those who have been using relational techniques for some time, and for one relational database in particular, Oracle.

Oracle claims to be unique in many respects, and truly relational in design. It uses IBM's access language SQL/DS with the friendlier name of Sequel 2 as its main query method.

Its developers, Relational Software Inc of Menlo Park, California describe it as the only high performance relational database management system available at the moment, and it won high praise from the US Navy DBMS tradeoff study as "an effective tool for general use."

Oracle consists of three major components. The data dictionary, which is described as being comparable with Cullinane's Integrated Data Dictionary, centrally defines all tables and data items.

Sequel 2 is billed as "a natural English-like language" which handles queries, data definition and manipulation, allowing non-programming personnel to retrieve information. A typical query is shown in Figure 1.

The third element is the Kernel of Oracle, the nucleus which deals with the physical arrangement of items and actually implements the relational method of storing data.

Using the technique of "normalisation," data structures are simplified into two-dimensional tables. "Any structure, no matter how complex, can be reduced to two-dimensional tables by repeating some of the data," explains the Oracle manual.

Hierarchical and network databases (which were the norm before the dramatic fall in the price of hardware) become increasingly complex as the database grows. In a hierarchical database, where the data is organised in a tree structure, the links between intersecting sets of records multipy and make the structure inflexible, whereas in a relational set-up, the structure remains simple because it relies on the repetition of data items in various tables rather than pointers.

According to Relational Software, this means better performance, because the data items can be changed or enlarged, even added to, without any reorganisation of existing data or programs. Oracle's Kernel compresses data items, automatically allocates and re-uses space, optimising I/O activity buffering.

It is also multi-threaded, supporting multiple concurrent batch and online updates and queries. The Kernel overlaps I/O operations up to the limits of the hardware configuration.

At the moment Oracle runs on IBM and Digital Equipment CPUs; PDP-11/23 upwards and all VAX machines; and IBM 360/370, 303X and 4300.

The operating systems supporting Oracle are RSX-11M, IAS, Unix, VAX/VMS and VAX/Unix on Digital Equipment machines, and VM, MVS, SVS, OS/MVT, OS/VS1, OS/MFT, DOS/VS, DOS/VSE and DOS on IBM.

"We've had a good look at Oracle, and it appears to be truly relational, in fact more so than any other database we've looked at," said Larry Kurtz of Doric, who handles the Info system in the UK. Info's RELATE verb gives it relational facilities, although its data structures are not "normalised" in the relational method.

"It's very good, very efficient, but it hasn't the facilities of Info, such as screen handling, report generation and programming aids, and it's a limitation that it only runs on IBM and Digital Equipment kit," he continued.

"I believe that those other facilities are being written into Oracle now, but in view of the prohibitive cost of Oracle, I'm not worried about the competition yet. They're charging $48,000 for VAX and $96,000 for IBM implementation as against an Info licence for $12,000 — and we can offer VSAM as well."

```
SELECT ENAME, LOC
FROM EMP,DEPT
WHERE EMP.DEPTNO=DEPT.DEPTNO;
```

This query selects data from more than one table to list the names of all employees and the locations of their departments. The WHERE clause identifies the common data item (DEPTNO) that allows the data in the EMP table of employees to be related or joined to the data in the DEPT department table.

Figure 1: Example of Sequel 2 query language, or SQL/DS as IBM calls it.

Now everyone is getting in on the act

IBM's leap on to the relational database bandwagon has been warmly welcomed by the companies which make their living from the IBM market, such as ADR, which claims to have anticipated the move with its Datacom product line.

In fact, everyone is anxious to be in on the act, and although IBM's own relational database System R (of which SQL/DS is the forerunner) shows no sign of imminent arrival, there are plenty of contenders already in the market.

The best known in the UK is Logica's Rapport, which has notched up several significant sales including a recent wholesale deal with British universities. Info is also gaining ground, with a major bureau sale to P & O, and 30 UK sites including nine at the Thames Water Authority and three at polytechnics.

Other products sporting the relational label are soon to join the race, including Oracle from Relational Software Inc, Computer Resources' Relate/3000 for the Hewlett-Packard 3000 mini, and Marathon from Relational Database Systems Inc.

IBM's own relational move, the SQL/DS query language, was announced in one of IBM's rare Statements of Direction and has triggered off a great deal of sound and fury over what is and is not relational.

The feeling among those who understand third normal form and [illegible] seems to be that many salesmen are attaching the relational tag to products which don't really earn it, although they may use "relational techniques", or give the user different views of the same data.

Without entering into technicalities, the end user expects a relational database to provide easy maintenance and expansion, and most of all an interactive query language which will be able to link data items to allow complex queries, rather in the way that Cullinane's OLQ (Online Query Language) gives a relational-like "window" on the non-relational IDMS database.

IBM's own SQL/DS seems to meet the requirements of giving "user-view" formats, data representation in tabular format, supported by a non-procedural language. Although a significant product, it is not thought to be a likely money-spinner at the monthly licensing fee of $300, unless used as a "software sponge" to soak up more hardware: it requires two full megabytes to run.

At the moment, SQL/DS only applies to the DOS/VSE market using DL/1 databases, and it will not be available until February 1982. But its announcement now puts relational databases firmly within IBM's strategy, despite predictions from IBM-watchers that there will not be a true relational breakthrough for larger users until the development of associative memory or content addressable storage.

Low cost, versatility P&O's aims with Info/IBM service

AIMING at the businessman as eventual end user, P&O Computer Services chose to offer the Info database system (billed as relational by its originator, Henco) in a bid to undercut other bureaux offering a development service such as IBM's Application System.

"It's not just a matter of being 30% cheaper, it's that we hope we will be giving a more versatile service," explained Alan Brown of P&O's marketing department.

The decision to offer Info as part of P&O's time sharing service on its remote terminal system, Ports, followed the use of the database for in-house development, including a complex personnel system to keep track of staff at sea.

Now P&O is hoping to attract existing users of the IBM AS, which until now has had little competition as a desktop high-level language development system for managers. Although highly thought of, the system is expensive to use, and P&O is hoping that potential AS users in an expanding market will plump for a cheaper alternative with the attraction of the relational tag.

Info is a database and application development which can access external files and link fields in files to provide permanent or temporary "views" of data in the relational manner. One-off reports as well as more lasting applications can be developed using Info's high-level language.

Since its release in the UK last year, Info has been running on a wide variety of equipment including Prime, but P&O is the first to offer Info as an IBM mainframe bureau service. It is being linked with the EPS evaluation and planning system as part of P&O's service.

The idea is that using a terminal in his own office, with a telephone link to the P&O 370/148 and 4341 mainframes at Rickmansworth, a businessman could access, query, update and maintain records on his own files. The system and its language are not difficult to learn and it is envisaged that in some companies, as with IBM's AS, the bureau's Info system might provide a company's sole means of data management.

P&O says that the conversion from Call/VSPC, under which AS runs, has proved to be a straightforward operation. It looks unlikely that IBM will release the AS service from its present bureau basis and on those grounds P&O is hoping to attract another sort of customer; the sort who was hoping to run AS in-house eventually, and who now will be prepared to test out Info on a bureau with a view to buying the system for implementation on his own computer.

"IBM has already proved that there's a ready market so in effect AS has given us a captive audience," said Brown.

P&O's personnel department pioneered the conversion from AS to Info with its Bulk Shipping Fleet Personnel system. The system can now be accessed by non-computer personnel staff who use it to keep track of leave due to those at sea, and allocate them to other ships where needed.

To solve the problems of the book industry

by Claire Gooding

AN online system designed especially for the book publishing industry has been launched by ICL software house Systemsolve, and its client Thomson Books Ltd.

The Booksolve system, which is already installed on an ICL 2905 in TBL's distribution centre at Camberley, Surrey, copes with all aspects of the business including specialised areas such as royalties to authors, a feature which is still under development.

TBL first approached Systemsolve with the idea about three years ago, and has spent £250,000 developing the system. So that other publishers can use Booksolve, Systemsolve has developed the system in nine main application modules, which can be configured according to need.

The system has been written with the entire ICL range in mind, and runs on ME29, 2904, 2905, 2946, 2956 under DME2, as well as on the recently announced 2966.

Although the entire system costs £30,000 (including all nine elements) Systemsolve believes that it offers publishers such advantages in terms of cash flow control and stock valuation that another three systems are likely to be sold this year alone.

Some modules adapt standard business requirements, such as sales, purchase and nominal ledgers, sales order processing and stock control, to the needs of the bookselling industry generally, and TBL in particular. In stock control, for example, there is a facility to record gratis issues of a book, and perform stock costing by title and imprint.

The specialised modules reflect the varying marketing methods used in different areas of publishing. The paperback features offered by Booksolve deal with high throughput "hype" methods used in paperback selling, and include bestseller lists, daily sales and income reports, and the monitoring of new titles and their targets.

Another module deals with the educational market and works largely through the distribution of inspection copies. It is not as time dependent as a fast-moving paperback market.

Available next month

by Hesh Wiener

INTEL'S first application for its 32-bit microprocessor is an evaluation kit called the Intellec 432/100 system which will be available in April at a US cost of $4,250. The system will include a circuit board, evaluation software and documentation.

The three-chip set is packaged in a 64-pin chip carrier. Two of the chips make up the unit's general data processor: the instruction decoder unit and the micro execution unit. The third chip is an interface processor. Each chip has about 200,000 transistors.

Intel says that existing applications for the 432 include banking transaction systems, telecommunications switching systems, PABXs, online office information systems, computer aided design, multi-user business systems, factory automation, control systems and voice and pattern recognition.

Celia Bogan, a director of United Leasing, and innovator of the company's "Art Rental for Offices" scheme, standing with the Landseer painting "An Arab Horse with Turkish Attendant".

Celia gets her act together for a West End lease of life

by Keith Jones

THE computer leasing industry may be risky, but having survived in it successfully for more than a decade (starting at a very early age), Celia Bogan of United Leasing has extended her sphere of interest into an even more precarious line of business – theatrical producing.

On a visit to New York last year Ms Bogan was bowled over by an "off-Broadway" show with the unusually long-winded title, "I'm Getting My Act Together and Taking it on the Road". In fact she loved it so much that she snapped up an option on the UK rights.

With £100,000 worth of backing from Celia, her industrialist husband and about 40 other "angels", the show opens in the West End next Tuesday, March 31, at the Apollo Theatre.

It is a musical with words, all about a 39-year-old ex-cabaret singer who wants to get back into show business after fulfilling the less glamorous role of housewife and mother.

Celia admits that her first stab at theatrical production was encouraged by the provisions in the 1980 Finance Act which encourage the entrepreneur by enabling losses from a new venture to be written off against post-tax income. But with a three-year run in New York behind it and successful stagings in Los Angeles and Chicago, "I'm Getting My Act Together . . ." could turn out to be a goldmine for Celia and her associates.

At the same time she is playing safe by retaining her post as a director and salesperson at United Leasing. This work still occupies her for nine months of the year and is not entirely tied up with the hard-nosed and colourless business of negotiating computer leases.

About two years ago Celia also introduced the company's "Art Rental for Offices" scheme, a bright idea but one which has not really caught on yet mainly because most firms are not terribly keen on adorning the walls of their offices with original paintings at the height of a recession.

UK first for DG's 32-bit mini

by Keith Jones

MAIDENHEAD-based Leasco Software is the first UK organisation to install Data General's first 32-bit computer, the MV/8000.

Leasco, which has a solid base of Data General experience, will use the MV/8000 to demonstrate its Compass package, a broad range of commercial systems that can run on Data General equipment ranging from Nova machines upwards.

The MV/8000 will also be used for the development of other commercial and technical packages and for internal administrative requirements, including a word processing service using Data General's Az-Text software.

One of the big attractions of the MV/8000 for Leasco was its compatibility with the 16-bit Data General machines.

Part of the consulting arm of the Reliance Group, Leasco Software employs 150 professional staff.

Evening with BCS winners

PRESENTATIONS by the three past winners of the British Computer Society Award will be made at the buffet supper meeting on April 22. The three are ICL's content addressable file store (CAFS), Research Machines' 380Z microcomputer and British Telecom's Prestel.

They will be described by Vic Maller of ICL, Mike O'Regan of Research Machines and Richard Hooper of British Telecom, who will each include an update on their reception in the market.

The meeting will be in the Wellcome Lecture Hall of the Royal Society at 6 Carlton House Terrace, London SW1, from 7pm. Tickets are £15 including supper (£10 for BCS members) and are available from the BCS.

Relational database for Unix

by Claire Gooding

A RELATIONAL database for use with the popular time sharing operating system Unix has been released by Relational Database Systems Inc of Sunnyvale, California. The Marathon DBMS, dealt with in this country by Keen of Nottingham, is said to contain all the power and flexibility of mainframe DBMS products yet "features a sleek design and low price".

Its facilities include a data entry language, Enter 1, used for file creation and maintenance, and a query language called Informer which is interactive and "English-like", allowing data to be viewed or written on to a scratch file for one-off inquiries.

There is also a report writer, Ace, and a data description language compiler.

The system runs on Bell Labs' original Unix system, versions 6 and 7, as well as the Onyx, Zenix and Cromix versions.

●For a roundup of the relational database scene, see Software File, page 7.

Software package success

INSTANT success for a software package allowing a Superbrain microcomputer to emulate a teletype terminal, followed a brief mention of it in Computer Weekly.

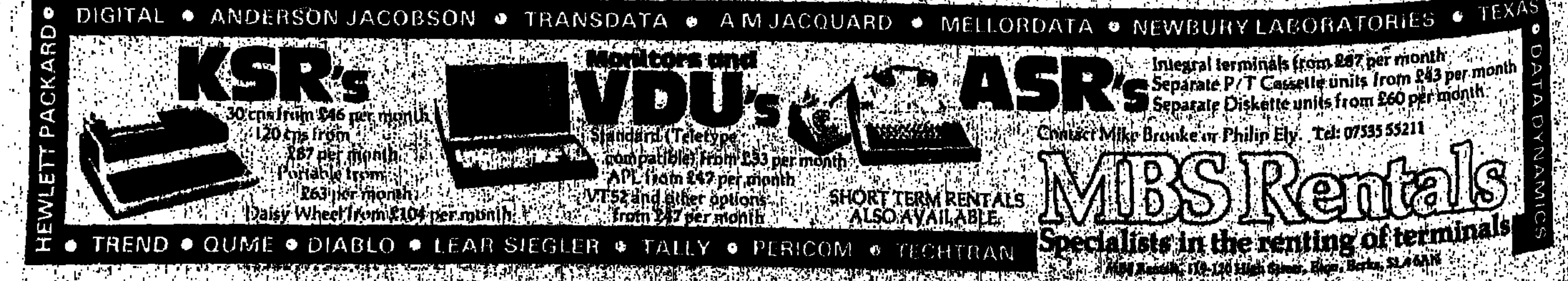
The package, called TTY, is produced by London software house Systematica. Managing director Hugh Neffendorf says an article about it several weeks ago has produced over 45 enquiries.

"Although the article was only a single paragraph, and did not include a phone number, we were amazed at the response. Over 45 organisations made enquiries, and about a quarter of these bought the program."

As of last week they included London Transport, Standard Telephones and Cables, F International, and Thorn-EMI.

TTY also permits the transfer of files to and from computers since it does not rely on control characters specific to any of them.

The package costs £180 and is available from Systematica at 112 The Strand, London WC2R 0AA. Tel: 01-836 9379.



MICRO NEWS by Eileen Stainer

Signetics to make M68000 – so what happens to Rockwell deal?

THE announcement last week that Signetics, with parent company Philips, is to second source Motorola's 68000 16/32 bit microprocessor and family has raised doubts about a prior agreement along similar lines between Rockwell and Motorola.

In 1979 Rockwell agreed to manufacture the 68000 and some peripheral devices, while Motorola was to manufacture Rockwell's 256K-bit bubble memory device. As yet, neither of these plans has blossomed to fruition.

The 68000, although regarded as a 16-bit microprocessor, is one of two devices around at the moment claimed to have an easy modification process to a 32-bit device. This feature becomes attractive to systems manufacturers as it makes their transition from 16 to 32-bit operations simpler, cheaper and altogether more convenient for the systems user.

However, obtaining this feature is no easy feat, and it has taken Motorola 70,000 transistors to do it. Other 16-bit microprocessors on the market are said to use between 20,000 to 30,000 transistors, the basic elements of integrated circuits.

The other available device with this property is Zilog's Z8000 chip, second sourced by Advanced Micro Devices in Sunnyvale, California, and adopted for use in their computer systems by Olivetti and Sperry Univac.

The complexity of the M68000 design has caused some industry speculators and competitors to doubt whether it can be manufactured at all, and Rockwell admits that it has had problems. It expects to sample next month, and production quantities are due by the third quarter.

Two other 68000 second source agreements have been signed with Hitachi and the French consortium Efcis, and NCR has committed itself to using the 68000 in its future products.

Other competition exists for the 68000. National Semiconductor has recently announced its 16032 processor which is a 16-bit device with a 32-bit internal architecture. Intel is the only company to have announced a true 32-bit microprocessor, the IAPX432, for the commercial market.

More doubt has been placed on the Rockwell/Motorola agreement by Motorola's decision to continue its own bubble memory design for a 1-megabit chip, and not to produce a lower level chip with the Rockwell design. More recently, Rockwell announced its exit from the bubble memory market altogether after an investment of about $15 million.

Both Motorola and Rockwell deny that the agreement will be terminated. Rockwell's production delay of the 68000 has been put down to incompatibilities between the two companies' technologies.

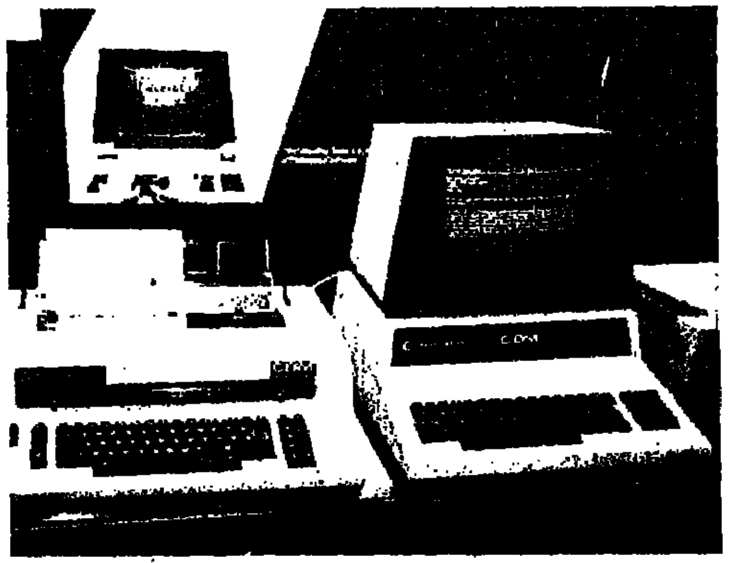
Rockwell's future plans include the manufacture of four peripheral 68000 chips: the 68120 intelligent peripheral controller; the 68451 memory management unit; the 68450 direct memory access controller and the 68561 data communications interface device.

The first two, developed by Motorola, are expected to be produced by Rockwell later this year. The 68540, designed by Hitachi, should be available next year and the fourth device, being developed by Rockwell, is expected in late 1982.

Signetics expects to be producing 68000s from its Advanced Technology Centre in Sunnyvale by the autumn. Volume production is expected in early 1982 at a new plant in Sunnyvale. Peripherals are planned for production in a new plant in Albuquerque.

At the same time Philips plans to produce samples of the 68000 from its MOS VLSI facility in Hamburg. Both companies have a free hand to develop what they like, as long as it conforms to an agreed common architecture. Such a development could include upgrading the 68000 to a 32-bit device.

Plans to develop their own 16-bit microprocessor similar to the 68000 have been shelved by Philips and Signetics.



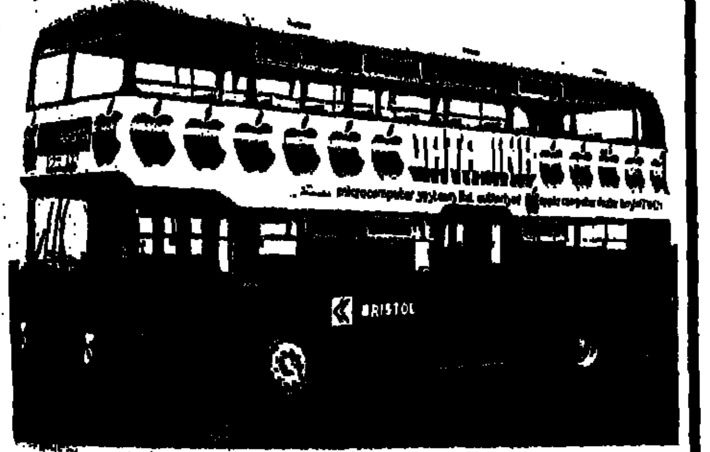
Two high quality printers have been released by Commodore for use with the SuperPet business system. Both are priced at under £1,000.

Printers for SuperPet

TWO high quality printers for use with the SuperPet business system are now available from Commodore's Systems Division. Both cost under 1,000 and require no external interfacing between Pet and printer.

The 8026 letter quality printer and typewriter has interchangeable 96-character daisy wheels and can operate at a speed of 17 chps. It has an integral keyboard for use as a typewriter with 48 characters, an erase tape allowing for up to 1400 corrections and it costs £995 plus VAT.

The 8027 is a quality letter printer, without the typewriter facility. It is a daisy wheel printer which operates at a speed of 17 chps, and is available for £850 plus VAT.



This latest gimmick in advertising Apple computers has been commissioned by Datalink Microcomputer Systems of Bristol.

Specially for the dentist

A MICROCOMPUTER for dentists has emerged from US computer company, Computer Information Systems of Arizona. Called the System 6000, it has been designed specifically to handle dentistry.

The system comes with standard software that includes accounts payable and receivable, patient recall, insurance forms, patient billing and word processing. Prices start at $14,850.

At the same time, an investigation is being carried out to find out how technology might best be used by dentists in the UK. Consultancy company, Scicon, is being sponsored by the British Dental Association and the Department of Industry, to launch an information search.

The results, expected to be published the middle of this year, will provide a set of guidelines and recommendations on computing in dentistry, compiled from interviews with dentists who have computers, and those who do not.

Competition in colour

THE introduction of Commodore's VIC-20 colour graphics personal computer in the US has caused competitors in the American market to reduce prices of their colour systems. Texas Instruments and Atari have decreased prices of their TI99/4 and 400 colour computers by $300 and $200 respectively.

The VIC-20, which was released in Japan and should be in the UK by Easter, comprises a keyboard similar to that of the Pet and a special video interface integrated circuit, giving it enhanced graphics capabilities. Based on the 6502 eight-bit microprocessor from MOS Technology, it sells for $299 in the US and probably $400 in the UK.

Commodore claims to have a three-month backlog of orders in Japan, although there are three similar Japanese products on the market there. The company considers that if the VIC-20 sells well in Japan then Europe and the US will be "plain sailing".

One micron dRAM from IBM

EXPERIMENTAL one micron dynamic RAMs have been developed by scientists at IBM's research centre in Yorktown Heights, New York. The fabrication process is claimed to be far simpler than previous ones, while keeping the similar densities.

System that fits a briefcase

A HANDHELD computer system that fits into a briefcase has been launched into the US market by Japanese company Matsushita. The system is similar to the Sharp PC1211 pocket computer, although it is almost double the price of the £100 Sharp system.

Part 4 of our series on setting up a company

by Kevin Cahill

How to finance that business venture without taking a loan

IN the last article we broadly distinguished between loans, which require regular capital and interest repayments, and which can seriously handicap the growth of a small computer company by loading the cash flow with negative payments before positive income arises, and equity capital, which has none of those effects.

Equity, in its simplest terms, is a non-recallable loan at interest rates which the company itself can determine.

Equity, while giving a company relief from payments which may become onerous to the point of fatality at times, also gives a company the opportunity to relate its performance directly to the reward its shareholders expect. The general return for good performance is a further opportunity to raise equity capital, and where a company is quoted on a stock exchange, to sell equity at a profit. For instance, at least one American computer company was reputed to have spent several years making more money from selling its shares than it did from marketing its products.

In the computer financing field there are three traditional main suppliers of mixed equity and loan funding capital. They are the National Research and Development Corp, the Industrial and Commercial Finance Corp, and the National Enterprise Board.

The NRDC has a strong reputation for funding basic research, though its balance sheet shows a bias towards university-type projects. Lately the corporation has been paying a large volume of tax, which suggests it is not investing as resolutely as it used to.

The ICFC has a long and distinguished history, with some involvement in almost every big computer company in the UK.

The National Enterprise Board, while best known for its past or present involvement with companies like ICL, Ferranti and Plessey, has also made a series of significant investments in much smaller companies, such as Leeds-based Systime.

If you decide that you would like to look at other sources of equity funds, however, there are three new and not directly related services which have emerged.

First there is the computer-oriented broker. A good example is Brian Mills, ex-managing director of BOC Datasolve, who is among the best-known figures to enter this field recently (see adjoining article).

Then there is capital funding from banks, an example of which was recently set up by Citibank with £12.5 million to invest. This scheme is administered by a central team, heavily biased towards computer companies.

John Littlechild, one of the investment officers concerned, explains that the scheme is intended to get money into the early stages of a company's growth, rather than provide set-up funds. He stresses that a company should have a product and at least a few customers, before approaching Citibank.

The fund has been running in the US for 10 to 15 years and numbers Datapoint, Storage Technology and Applicon among its successes.

Littlechild stresses that Citibank recognises that many computer companies require long-term funding for profitable growth. "We are not an in and out organisation," he says. "Once we are in, we stick with our clients."

Citibank emphasises that it is investing in the management of a company and looks for a coherent and experienced team to lead the project. The initial presentation to it will be the potential borrower's business plan, and Citibank would look for the following points:

- The management team;
- Plans of what the company is going to do;
- Details of products;
- What the manufacturing programme is;
- What R&D is planned;
- Good knowledge of basic markets;
- Details of existing customers;
- Cash flow statement.

The minimum stake Citibank would take is about £200,000. There is no upper ceiling and Citibank often syndicates with like-minded investors to spread the risk and increase the funds available.

For those who prefer to seek a more anglicised source of funds, a number of stockbroking companies are beginning to specialise in organising equity for new computer companies.

One of these is Greene and Co, whose statistics frequently appear in these pages.

Another company, which has six offices straddling what may well become one of the UK's Silicon Valleys down in rural Berkshire, is Hesaltine Moss and Co.

Martin Ingram is the research partner in its London office, and he explained why many computer companies might find a stockbroker a congenial and effective partner.

"Over the years, Hesaltine Moss has built up a portfolio of private and institutional investors in the UK. We know the clients intimately and can usually arrange the most compatible match of investor and recipient. Frequently we can arrange local participation in a company which will add to a company's marketing and other contacts.

"Where a board appointment is agreed we can arrange that the match, as well as providing the investor with a point of contact with his investment, will also provide the recipient with a stockbroker.

"By starting with a stockbroker, a small company begins the logical preparation for a stock market quotation."

- In the next article in this series, we will look at how a computer company might get a stock market listing, and at the experiences of some computer companies which are quoted on the London Stock Exchange.

BRIAN MILLS . . . A variety of ways to help small computer companies.

Ex-BOC man's consultancy aims to satisfy a 'huge need'

BRIAN MILLS, former chief executive of BOC Datasolve, and one of the best known names in the UK computer industry over the past 20 years, has got together with Stanford trained David Ferris to form a new computer-oriented finance consultancy called Ferris Mills & Associates.

The pair, who between them muster over 30 years' experience in the data processing industry, feel that there is a huge need for the kinds of service they offer.

Mills says there are a variety of ways in which they could help small computer companies, principally by finding loan and venture or equity capital from their many contacts in UK and US financial circles.

He said he acted as adviser to both borrowers and investors, depending on the requirement.

At the moment in the UK there is a strong two-way interest in small companies, noted Mills.

In fact John Evans, investment manager of the Industrial and Commercial Finance Corp, was recently quoted as saying, "There is so much money chasing so few companies."

At least part of this "money" would use people like Ferris and Mills to guide them to the right kind of computer companies in which to invest.

Mills stresses the need to begin the relationship well ahead of a request for funding. It is difficult in most financial matters if the parties don't know each other prior to the request he says, so the best approach is to "get to know companies like ours before a specific need arises." He cited CAP-CPP as a recent case where he and Ferris were invited to find a partner for the company, but failed because of the very short time span involved.

A really good match between a computer company and a sound and suitable financial partner cannot be made overnight, Mills said. In most cases neither the investor nor the company want all their eggs in one basket.

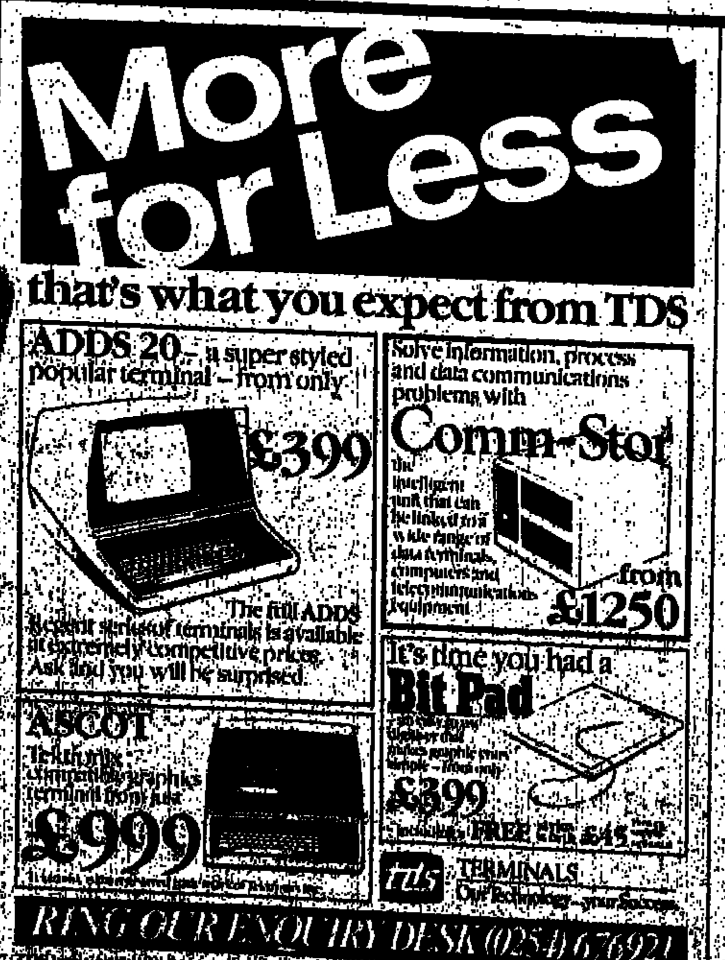
Both Ferris and Mills stressed the need for a really good business plan when a company is looking for finance for new ventures and expansion. Even a good company can lose potentially sound investors if the presentation, what UK brokers would call the "prospectus", is poor.

Ferris stressed that a plan did not need to be either long or complicated.

Ferris, who has acted as a marketing consultant to Hitachi and Intel in the US, said that the sums available for investment to which they had access ranged from managed £1 billion trusts down to small private clients putting up £70,000.

All systems go

ONE OF the largest independent disc suppliers, System Industries, has announced a new turnover and profits high for the year ending last December, with revenues of $37.9 million ($25 million for 1979) and post-tax profits of $1.9 million, excluding $516,000 tax credits, from what the company describes as "discontinued operations".



UK systems house moves into Dallas

by Keith Jones

OIL-RICH Dallas is the location selected by UK systems and software house, Computer Systems International, for its second office in the US.

CSI managing director Peter Hunter said Dallas was chosen because it was seen as one place unaffected by the recession.

He added that there were now no expansion plans for the UK.

CSI's operations in the US started in 1971 and led to a full subsidiary company, Computer Systems Development Inc, being set up in New York in 1976. Areas of activity have include database implementation for banks, insurance companies and stockbrokers, and message switching network development for members of the banking community.

Hunter said the main customers in Dallas would be oil companies, and the work of a general commercial nature. It would not be "technologically exciting". The whole aim was simply to expand the company's business.

Measures to achieve this have also included the recruitment of 18 additional computer professionals in the UK to work for the US company.

There are three companies in the CSI group, the other being the IBM-based bureau Computer and Accounting Services. All three are owned by the unquoted UK holding company, Lopex, a major force in the advertising and market research business with a turnover of about £90 million a year.

The CSI group chalked up pretax profits of £157,000 in 1980 on a £1.7 million turnover. The US side contributed about $150,000 to the profit figure and $1.5 million to turnover.

Digico parent raises £2m for expansion

A TREBLING of the issued share capital of Spanverne Investments, the parent company of Hertfordshire-based mini maker Digico, has raised about £2 million gross for expansion of the group's product range. This will include a move by Digico into microcomputers.

The issue share capital has gone up from £303,000 to £1,002,295 after a private placing of 1,212,000 shares of par value 25p each at 165p per share. The enlarged issue capitalises the group at £6.6 million.

Digico and its offshoots, including Digico Maintenance, Digico Consultancy and Digico Rentals, accounts for about 70% of the turnover of Spanverne, which for the year ended last September 30 amounted to £3.5 million. Profits before tax were £310,000.

Spanverne has other interests across the computer industry including programming and training activities, and also includes the magnetic tape and printer supplies company MIBF.

A statement from Spanverne says the extra capital will be used primarily to expand the group's product range and to finance "longer-term opportunities for expansion including acquisitions".

Most of the extra shares were placed with City institutions, though some existing shareholders chipped in with £228,000. The placing means that net tangible assets valued at £1.25 million last year are £2.89 million when adjusted for the placing.

The placing was completed by Robert Fleming & Co in conjunction with stockbrokers Kitkat and Aitken.

Consultancy business beats the slump

by Rory Johnston

PROSPECTS for consultancy firms look good, and some have had a major upsurge in business over the last few months despite the recession. That was the view of Martin Vandersteen, of Arthur Andersen, chairman of the Management Consultants Association, in presenting the group's annual report.

After cutbacks in staff most member firms are recruiting again, Vandersteen said, with much of the increased demand for consultancy being in the data processing and information systems area.

Firms' turnover has increased 16% over 1979 both at home and overseas, just keeping pace with inflation and reversing the downward trend overseas: Middle Eastern business has fallen off dramatically, owing to the "Death of a Princess" row in Saudi Arabia and the troubles in Iran, but there has been a "surprising increase" of 46% in work in North America. This is despite the high pound which is making UK consultants no cheaper than their Canadian and US counterparts.

Some member firms, according to Mike West of the Economist Intelligence Unit, had detected increased interest from foreign countries in investment in the UK. This seemed to be due to bargain share prices here currently, and the general feeling that "we were beginning to get our house in order."

Other firms are working with the British Consultants Bureau to develop business prospects in China. If the World Bank's plans to give substantial aid to China succeed, an "enormous amount of work for the consultancies will follow," according to Tony Howitt of Peat Marwick Mitchell.

Much of consultancies' current work is in helping firms hold down costs and in "positive rescues" to stave off bankruptcies. This involves recommending cost-cutting control systems and in many cases the dismantling of large central DP departments with excess capacity. Big savings could be made by sending DP work out to bureaux now, said Ian Hancock of Coopers and Lybrand.

The public sector remains a large untapped market, Vandersteen said. A working party has been formed to identify targets and persuade decision-makers in government of the advantages of new organisational methods and technology.

The North American business was mainly advising on new business opportunities in Europe, executive search, and energy conservation.

Profits doubled at Cullinane

TURNOVER and net profit up 65% and 110% respectively, have been announced for the third quarter ended January 1981 of its current fiscal year by Cullinane Database Systems Inc, the firm that used to be called Cullinane Corp. The actual figures were $7,715,000 and $1,355,000.

Cullinane attributes £300,000 or 46% of the net profit increase to the interest earned from the investment in marketable securities of the proceeds of a public offering.

Turnover and net profit figures for the nine-month period were $20,629,000 and $3,043,000, respectively, well up on the $12,738,000 and $1,708,000 of January 1980.

MSA share price

THE share price of Management Science America, which announced its intention to go public last week, is likely to be between $13 and $16. The initial offering consists of a primary 950,000 shares followed by a secondary offering of 550,000, which will bring MSA between $19.5-$24 million and leave outstanding 6,165,496 common shares.

Public offer

PERIPHERAL and multiplexer manufacturer Emulux has filed a registration statement with the US Securities and Exchange Commission to make an initial public offering of its common stock. The 742,869 common shares, 425,713 from the company and the rest from shareholders, will be sold to raise money for capital assets and repayment of bank loans.

CW SHARES TABLE

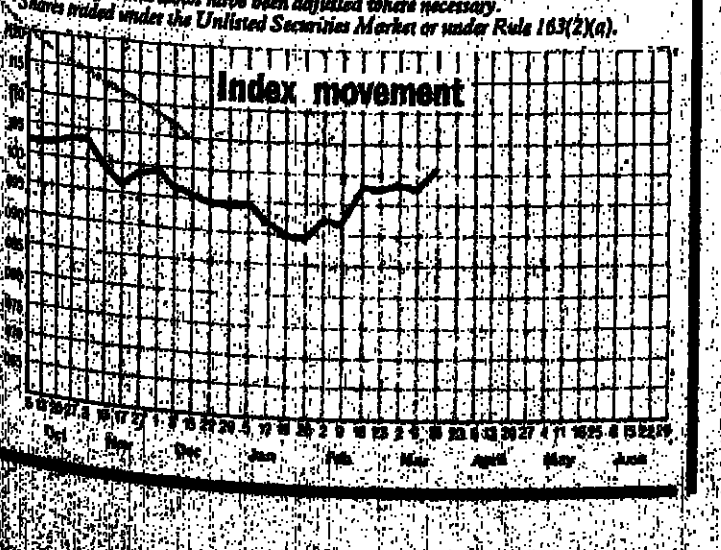
Date: 20/3/81

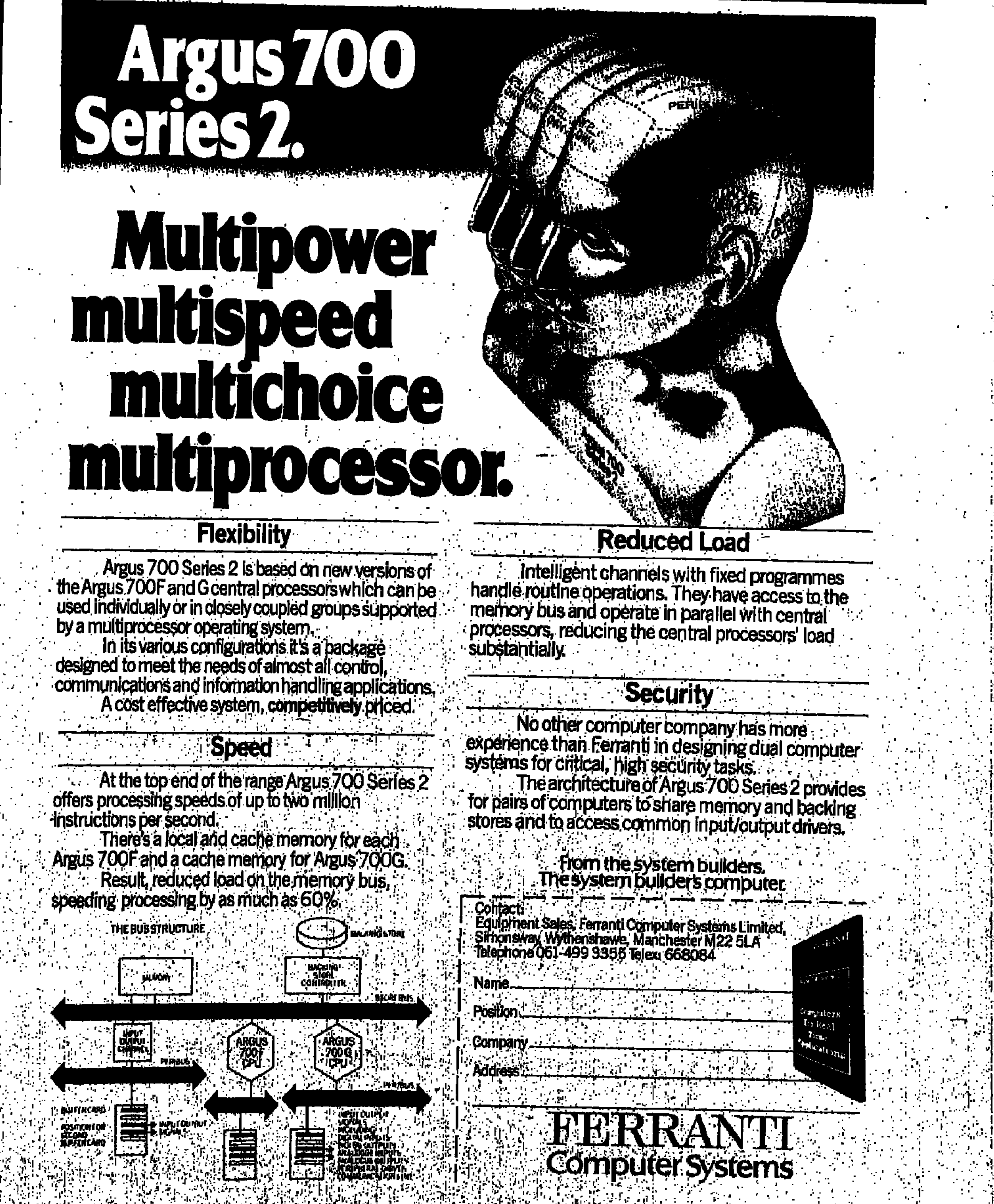
Index 100.93 Change: +3.34

Pence 1981 High	Pence 1981 Low	London Stock Exchange Stock	Pence Price	Pence C'nge
143	115	A Comp Tech (25p)	143	+8
128	102	BOC Int (25p)	120	+8
22	18	B Sov Xacs (25p)	19	
82	60	Chubb (20p)	82	+8
63	48	Cole (R.H.) (25p)	58	+3
765	625	De La Rue (25p)	665	+40
187	171	Extel (25p)	171	
580	423	Ferranti (50p)	560	+35
661	568	GEC (25p)	661	+15
67	36	ICL (25p)		Susp.
79	65	Kalamazoo (10p)	65	
325	260	Kode Int (25p)	325	-40
119	68	Muirhead (25p)	113	-3
365	320	Office & Elect (25p)	230	-7
377	233	Philips Lamp (Fl 10)	377	+27
377	256	Plessey (50p)	227	+13
288	205	Racal Elect (25p)	262	+14
180	110	Rediffusion (25p)	183	+24
372	280	Thorn EMI (25p)	372	+22
		OTHER MARKETS*		
808	710	Comp & Systems (5p)	800	+40
1100	770	NMW (£1)	1110	
185	165	Quest Auto (10p)	175	+2
98	40	Rotle & Nolan (10p)	97	+1
229	155	ScanData (10p)	185	+5
$		US Stocks	$	
32¼	20¾	Amdahl	32⅞	-⅜
32½	21⅜	Apple Inc	26½	+4⅝
50¼	47⅝	Auto Data Pro	53¼	+1½
53¾	40	Burroughs	53¼	-2⅛
3⅜	2⅛	Commodore	3⅝	+⅝
16⅝	14	Comp Automation	14	⅛

$ 1981 High	$ 1981 Low	US Stocks Stock	$ Price	$ C'nge
21⅝	16¼	Comp Sciences	16⅞	+½
18	16½	Comshare	16½	
69⅝	60¼	Control Data	65¼	+2⅜
28¾	31⅛	Cray Research	34¾	+⅞
60	48⅝	Data General	47⅛	2⅛
56⅞	47⅛	Datapoint	52½	+¾
38⅛	31⅞	Dataproducts	33⅞	+⅛
88½	87¼	Digital Equipment	84⅝	+3⅛
45⅛	36	Elec Data Sys	45¼	+3
11½	8¾	Gen Automation	11½	+1¼
51¼	44⅝	Harris	51⅜	+1⅜
87¾	81⅜	Hewlett-Packard	87¾	+3⅛
104	89½	Honeywell	102⅞	-1½
38¾	33	Intel	34	-½
67½	61⅛	IBM	63⅞	-
80	66⅝	Litton Ind	58⅞	3⅛
21⅜	16⅞	MDS (Mohawk Data)	71¾	+1¼
15¾	13¼	Mngmnt Assist	14⅜	-⅞
13¾	10½	Memorex	13¾	-2½
21⅝	13¾	Modular Comp	14¼	+½
68½	60	Motorola	69½	+1⅞
36¼	29½	National Semi	29⅛	+¼
73	67⅞	NCR	63	-⅝
31	26⅝	Perkin Elmer	28⅝	+⅞
36⅞	26⅝	Prime	30	+1⅜
102	93⅞	Raytheon	93⅛	+6¾
29⅝	25⅝	Signal	28⅝	-⅝
62⅛	61¾	Sperry Corp	68⅝	+2⅞
78¾	18¼	Storage Tech	29¾	-⅞
63⅝	40⅝	Tandy	63⅝	+1⅝
117½	106⅝	Texas Instruments	115¾	+6¼
45⅞	41⅛	Tymshare	44⅞	+1⅛
37	33½	Wang Lab B	35½	⅝
14⅝	11½	Wyly	12	

The table shows the closing prices in America on Thursday and the mid-day prices on Friday for London. The share index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.
** Shares traded under the Unlisted Securities Market or under Rule 163(2)(a).*





GILB'S MYTHODOLOGY

Learning humanised input from hobby computer practices

Tom Gilb is an independent consultant, lecturer and author on computing topics.

IN the early days, a couple of years ago, the microcomputer software could be as bad as the rest of the industry at making a system difficult to learn and understand. Now, in many respects, they are leaders in "ease of use" practices.

The reason is simple: The user is the buyer. If the user/buyer does not easily understand a program in the local computer shop, there is little motivation to buy it. If the user/buyer is not pleased with the product after a few weeks of use at home, in the shop or in the office, then there is little reason to rave about it to colleagues.

The microcomputer personal software must be user friendly to survive. Last summer in Kuwait I noticed that the managing director of my hotel had called a conference of European Sheraton management. I couldn't help noticing the Apple computer as I passed their conference room. He was so enthusiastic about the Apple that he was taking a personal initiative to "sell" the system to the international management. His wife had successfully used one in her gift shop, and he and his colleagues had successfully used Visicalc (a best-selling financial modelling program, with ease of use as a feature) in the hotel business.

I will never forget seeing this chief executive sitting all evening enthusiastically building Visicalc reports on his Apple — alone, no computer specialists, and no manual or written instructions of any kind. I never saw that enthusiasm or solo ability on the larger computers, and certainly not at that high an executive level — nor at the "lady shop-keeper" level.

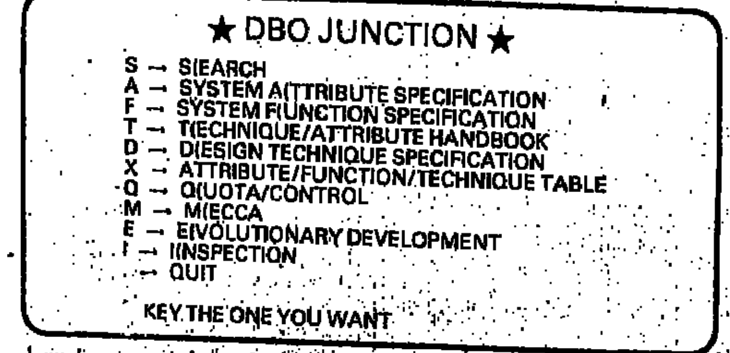
It's not the hardware that is so different; it is not the programming languages or the database systems. It is the design of the human interface to the computer which has changed for the better.

I suspect we all have some lessons to learn from the best software out there. I recently taught at a major manufacturer's software site a course on humanised input. They were making administrative systems software for an international market for large-scale hardware. Somebody knew they needed to improve their ways; that's why I was there. I don't think they had ever been exposed to a microcomputer or even a decent human interface.

> **It is the design of the human interface which has changed for the better.**

One exchange between us was typical, and sticks in my mind: I suggested that perhaps it was not always necessary to require the user to hit the "ENTER" key after all data element entries (for example after YES/NO and commands of fixed length). This gave rise to all manner of objection, explaining why the enter keystroke was necessary. The ultimate argument was something about the "hardware requiring it".

I told them that it was *their* hardware, and they had better change it fast if that was true, that they couldn't sense keystrokes as well as an Apple could.



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                ★ DBO JUNCTION ★
S → S(EARCH
A → SYSTEM A(TTRIBUTE SPECIFICATION
F → SYSTEM F(UNCTION SPECIFICATION
T → T(ECHNIQUE/ATTRIBUTE HANDBOOK
D → D(ESIGN TECHNIQUE SPECIFICATION
X → ATTRIBUTE/FUNCTION/TECHNIQUE TABLE
Q → Q(UOTA/CONTROL
M → M(ECCA
E → E(VOLUTIONARY DEVELOPMENT
I → I(NSPECTION
  → QUIT

    KEY THE ONE YOU WANT
```

A single mnemonic keystroke, and no return or enter key, is all that is necessary to command most aspects of the automated Design by Objectives system on the Apple II (designed by Lech Krzanik and Tom Gilb). This view is from the main menu.

This one single trick of sensing the keys as depressed, and not requiring enter/return key depression, has become very popular on the Apple recently, simply because it makes the workflow so much easier and faster. But who knows, maybe the idea was originally self-defence so that by avoiding hitting the return button, you also avoid that classical Apple problem of hitting the "RESET" button which unfortunately was right next to it.

Recently an Apple colleague gave me a set of programs he had written. As we were copying them over to one of my diskettes, I asked if he had some written documentation. He replied that he hoped written documentation was unnecessary. All programs were completely self-explanatory.

How many of us can say that about our present systems? Not many, I suspect. Yet what is stopping us from designing at least our next system that way? Surely the cost of hardware is not a relevant consideration any longer, at least not with the human productivity benefits to be gained from such an approach?

In speaking to one of the internationally famous micro-software designers, I was told that the only reason he designs any documentation into his packages is for marketing. It is to make the buyer feel he is getting something for his money, by providing a visible product. It is also to make it slightly less easy to pirate the software by mere diskette copying.

Before I visited my manufacturer client for the humanised input course, I asked to read some of their recent manuals. My reaction was that everything — every single data element of the thousands designed into current systems — was capable of interesting levels of improvement. To test this hypothesis, and to dramatise it for the participants, I laid out seven current system manual in front of the class and asked them to pick random manual and page numbers. We then used the chosen page to seek improvements. We started upper left and looked critically at every single element of screen output or required input. Sure enough, we managed to suggest interesting improvements in nearly every single element we attacked.

In fact a very large proportion of the things we looked at were ultimately eliminated (30 to 50%) as totally superfluous or as replaceable by far more efficient means elsewhere. Many, although not all, of these improvements require more programming and more hardware. But if the marketing advantage is sufficiently great, it must be done.

At the same lab, I was looking at a new hardware/software product for message handling and text processing. It had been out in the US for a year and was coming on to the European market. I tried the system out as a novice, and one of my first questions was "Why do I have to push the "REQUEST" button before entering a command from the main menu? To get list function I would have to press five keys (REQUEST, LIS, ENTER).

> **Surely the cost of hardware is not a relevant consideration any longer . . .**

To make a short story even shorter, the developers said. That's a good question. We have no answer. And they indicated that they had decided to eliminate the need to press those buttons (REQUEST, ENTER) and to shorten the most frequent commands (L being for example unique for List). Nobody had ever thought these simple thoughts it seems.

I suggested that their corporation should treat them all to an Apple, to spoil them with humanised systems design ideas.

Gilb's Hypothesis: The microcomputer will spoil the users so much that the big boys won't be able to survive with the badly designed human interfaces they have been imposing on users and programmers alike for two decades. The mighty micro wins again!

Tom Gilb

FOCUS

Opening the door for women in computing

BY tradition, the women's place in computing is behind the VDU screen or on an exhibition stand. It seems they are still kept in their place rather than seeking to establish their place in the industry.

The female DP problem is not confined to the UK. The news that a woman had been appointed a vice-president with responsibilities for 167 DP personnel was front page news recently in a leading US computing journal. Few weeks go by without details of fervent groups of women's libbers joining forces to challenge the male domination of computing.

In the States, the three leading groups are Women in Information, Women in Data Processing, and The Association for Women in Data Processing.

The UK as yet can boast only one such female chauvinist team, Women and Computing.

What all these groups lack — apart from a co-ordinating liaison officer — is an awareness of the problems facing DP management. The necessity to get the work out on time, even if it means working extended hours, is the overriding factor.

This objective often conflicts with the female members of the installation team who see their priorities as being their weekly visit to the keep-fit class, the laundromat or movie. Their enthusiasm for the industry stops short at 5pm when the programming branch subroutine is dropped in favour of the local Tesco branch shopping routine.

Hardly surprisingly, many DPMs regard the presence of a woman in the operations team as about as welcome as a system audit, a visit from a PCM supplier or a hike in the price of software. As do many male operators. The operations rest room has for many generations been a male preserve.

Even Ms Steve Shirley who runs the admirable F International organisation, a home croft programming operation, admits that women are less willing to work late, to make up for a long lunchbreak or to join in the ritual couple of drinks after work.

This, to many involved in computing, would seem to be the crunch. Data processing, whether organising, operating or selling, is essentially a team affair. Those involved are frequently indifferent as to the time of day (or night).

Computing, it would seem, is not yet ready for women. Whether women are ready for computing is an equally contentious question, one which in the present environment could find the writer being hung up outside the BCS hq, with quarters being displayed at the NCC Manchester, ICL at Putney and IBM at Portsmouth.

However, even the most dedicated sexist would have to agree that women are noticeably thin on the DP ground.

Both the IDPM and the TUC are concerned with the role of women in DP. The TUC would like to see more female involvement in computer training courses while the IDPM has launched a "helping hand" project to assist those willing to climb the promotion ladder.

At a time when increasing numbers of women are entering university computing courses, doors will have to be opened for women in computing. And those doors cannot be restricted to the data prep, machine operation or programming rooms.

Alan Simpson

10 YEARS AGO

From Computer Weekly of March 25, 1971 . . .

REDUNDANCY in the computer business is becoming commonplace. So far the brunt has fallen on the services sector. Now, however, reorganisation in users' computer departments is beginning to tell. In three companies alone, N. M. Rothschild, the British Steel Corp and ICI, more than 200 people are to lose their jobs or face redeployment . . . The Cogar Corp of New York, which claims to be the world's largest independent producer of semiconductor memories, has set up a European headquarters, based in Munich . . . An NCC survey put the increase in staffing levels for office installations valued at over £20,000 for systems analysts, programmers, operators and data preparation personnel respectively, at 3.3, 5.8, 3.8 and 13.2 per cent respectively . . . The new Sigma 8 computer from Xerox Data Systems was announced in the US last week.

DOWNTIME

Now just take your average housewife. . .

I WAS fuming a bit last week over people's fantasies about computerised household gadgets. There has been some correspondence in The Times about the same subject, starting with an article that opened, "With the microchip revolution promising to banish for ever the drudgery of domestic life . . ."

I was glad to see a Top Person write in to say (in his own way) "Cobblers! Where's the machine that will make the beds and darn socks?"

The main story, however, was that an advertising agency had run an experiment to find out why housewives were afraid of technology. To uncover this, a selection of "average" housewives was given four machines and the accompanying instruction books and told to make them work. The machines were: a Prestel set, a microwave oven, a home computer, and a video-cassette recorder.

The housewives had a little trouble. In fact, they had a great deal of trouble. In the words of a director of the agency: the results were "uniformly disastrous."

And everybody seemed surprised! Well, of course it was disastrous. For a start, plenty of ordinary people would have only a vague idea of what those machines were for, apart from the oven. How can you be expected to achieve anything if you are not clear what your objectives are?

I would have thought it obvious that people need to be introduced to something very unfamiliar by human beings, not by books; by tangible examples, not by pictures. Of course, this requires having knowledgeable human beings around, and they are a rare commodity these days.

I was in a shop in the Tottenham Court Road, London, the other day and I expressed interest in an electronic piano that I assumed was for sale. "How does one work it?" I asked.

"Dunno," replied the gormless youth, showing no interest in obtaining my money. The labels on the keys were almost as unhelpful.

One of The Times correspondents made the same complaint about the symbols on her tumble drier.

Scope for thought as a company collapses

SOMEBODY was going through the books of Scope Data Systems, the firm that has just been involved in convoluted bankruptcy proceedings and takeover. It seems that a lot of Scope's belongings were in fact leased from another firm, Black Arrow, and here was a list of the items on lease, including desks, kitchen sink, and coffee machine.

"Then what should appear on the list but 1 200 coffee filters." We've been trying to work out how you return a coffee filter when the lease expires. Perhaps you need a special cleaning machine.

Anyway, it's no more puzzling than the leaflet for farmers I have from Lloyds Bank headed "Fertiliser Loan Scheme." Do you suppose Lloyds is finally providing venture capital for advanced technology and is funding development of a machine that sucks the fertiliser out of the soil and repacks it into bags?

"Essentially it's a conversation piece."

Don't panic

I THOUGHT the phrase "Don't push the panic button" was purely imaginative, until I was riding in a lift at the Central Computers and Telecommunications Agency the other day. There on the wall was a notice: "In case of breakdown, telephone the switchboard. If no reply, push the panic button."

I searched eagerly for a button that was actually labelled "Panic," without success.

By any other name

I HAVE received a communication from ADAPSO, the US computing services association, telling me that "Ms. Carol Clokey, Esq., has joined ADAPSO's legal staff."

Visions have been swimming through my head of some liberated person fearlessly spearheading the computing business lobbying in Washington. Clearly it is advantageous not to let your opponents know much about you, but confusing them about your sex as well as your marital status is a pretty good trick!

However, there is a less exotic explanation. It is customary in the States for lawyers to be addressed as "esquire," and with their lack of concern for the niceties of language, Americans tend to apply the title to legal ladies now, as well as men.

The lady in question would be as fair by any other label.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, March 26, 1981

Investing in ICL

IT WAS a nice line spun by Sir Keith Joseph in the Commons last week when he said he had been forced to step in and support ICL because the government is a big ICL user.

It was also nonsense.

Does anyone seriously believe that, should ICL be taken over, the new parent would not continue to support its installed base? If they do, look at the examples where such support was continued quite smoothly — RCA, General Electric and Xerox to name three (and Singer a fourth).

Sir Keith should not apologise for putting some of his Department's guarantees behind ICL. He should be definite that he will not stand idly by while ICL's trading difficulties leave it vulnerable to the passing whim of every foreign multinational.

It is a measure of the muddled thinking at his Department that he has been afraid to show an interventionist hand and ended up merely tickling the problem. ICL did not get into its present troubles by accident, and will not trade out of them without substantially strengthening parts of its product range and beefing up parts of its marketing strategy.

If that demands management changes, so be it. If it demands a great deal more cash for investment, so be that as well. But it must surely demand some more tangible commitment by the Secretary of State to the British computer industry.

Data protection

THE Home Secretary's statement on data protection is as tantalising as the cavortings of Gipsy Rose Lee. Mr Whitelaw has announced a series of ambitious tasks he has set himself without saying how he intends to go about them. There is serious doubt in the industry that the proposals could be implemented at all in the absence of a Data Protection Authority, and it is not clear whether the Home Office, which refuses to explain the statement any further, has worked out a scheme for doing the job. Perhaps it is simply hoping in its simplicity that one will be found.

Cost is the reason given for why the idea of an authority was rejected; it is much more likely that the real reason is ideological, and there is plenty to be said for this view. It has long been argued that data protection legislation is attacking the problem from the wrong end: that it is actions not information that need to be controlled, and that a Data Protection Authority could itself be a sinister "Big Brother".

For this reason the Computing Services Association proposals merit careful scrutiny. Redress of infringements of privacy could best be carried out through civil legal action. The problem with the Whitelaw proposals is that they try to implement the controls from the Lindop report without the Lindop mechanism for doing it. Where would the codes of practice come from if not from a DPA? Who would police the registry and the "requirements" if not the DPA?

It is probable that the answer to the last question is the Home Office itself. But Sir Norman Lindop has pointed out that it is the same Home Office that possesses some of the most sensitive files. No one should be poacher and gamekeeper at the same time, he feels.

The confusion has led at least one industry figure to surmise that the Home Office staff are either incompetent, or know precisely what they are doing and are deliberately concealing this from the public.

Other countries are carrying on with their data protection schemes, and some, specifically the Scandinavian nations and France, are finding that registration systems are getting too cumbersome. There are moves now to exempt all but the most sensitive systems. By the time Mr Whitelaw's proposals are realised data protection may be a dead issue.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by J. Seifert of Associated British Consultants, who wins £5.

Koniev, the KGB man, said, "Can we find out what is happening in Moscow?"

"Easily done, Comrade Koniev," Colonel Santorin said, and addressed himself to the computer terminal next to his seat. On a display screen across the narrow cavern a series of symbols appeared.

"What's that gibberish?" Koniev asked.

"Fortran, Comrade. Computer language. It says that the city has been evacuated except for essential personnel, all of whom are in shelters. The SAM batteries ringing the city are manned and the defensive air patrols are airborne."

The Hastings Conspiracy, by Alfred Coppel

LETTERS

User groups' main activity is not software copying!

ONE would take exception to Alistair Kelman's statement (CW, March 12) that "We must work for the elimination of user groups," if that remark were made from an informed position. As the founder of IPUG (South), now SUPA, one of the largest user groups in the UK, it would be dishonest to say that program copying does not take place, but the scale is so small that it can't be a problem to software authors.

The true nature of *our* user group is to help members who have been dumped or neglected by retail outlets who will sell a system or program which subsequently won't do what it was bought for! Anything that educates in the field of computing ought not to be eliminated.

However, to return to the issue of copyright, it ought to be recognised that software outlets are quite capable of protecting themselves — either by "dongles" (from Wordcraft) or security chips (Commodore). Whatever the protection chosen, it should not add significantly to the cost of production and might indeed force a price reduction to a more realistic level.

I am sure that SUPA is not alone in acting as an interface between a manufacturer and a dealer and the general public. And as long as that exchange of information continues, I hope Alistair Kelman will work to encourage them, and not kill them off!

JOHN C. NUTTALL
SUPA (Southern Users of Pets Association)
Henfield West Sussex

Replacing today's technology

I AM stirred to write after having read yet another plea on behalf of the teaching of teachers of computing. I know that what I am about to state has been said before, but so far I have seen no reasoned rebuttal.

The point is that we do not need computer experts at undergraduate level — we need physicists or accountants or whatever. Unless and until someone produces a new sort of machine, teaching the use of computers to schoolchildren is on the same importance level as teaching them to use adding machines or typewriters.

Nobody suggests that the study of English is only complete if you have had an O-level course in the use of word processors, but it seems as if the nation's Mechanics papers are now prepared on computer facilities. This might not matter, but at a time when education is being starved of funds, the matter is of more than "academic" interest.

I suspect that we are still suffering from a collective national feeling that technology is rather like cod liver oil — a massive dose taken daily will cure all ills. Technology is actually a reaction to an immediate problem, and today's solutions are of interest only to tomorrow's industrial archaeologist.

Expert computer manipulators are the same breed as experts in using sailing ships or steam engines. The greatest danger is that in concentrating on the application of a principle you forget to mention the principle itself.

It is not even possible to plead the needs of that job market as a defence. No one who has used school or college facilities can come, without some degree of culture shock, to the everyday use of computing power. One of the best programmers I have known had four O-Levels and near non-numeracy.

If the educational system is to be of any use, it should be concentrating on training minds that will devise replacements to today's technology, rather than on conditioning children to accept today's answers to today's problems as final.

J. R. RAINBOW
Gloucester

Financing teachers' courses

REGARDING the letter on the training of computer teachers (CW, March 12) the problem is not merely a shortage of courses available to teachers, but whether the LEA will support willing teachers in their plight to become more skilled in this area.

Let me relate to my own experiences.

I have taught in comprehensives for some time and I have always endeavoured to encourage and promote computer appreciation at all times, purely on a voluntary basis by running clubs and becoming a member of MUSE outside school time.

Eventually this year I have helped persuade the school to introduce a CSE course starting as a fourth option in September. We have purchased two Pets out of school capitation and a set of suitable textbooks.

I have applied for literally dozens of short courses but have been refused flatly any support by Lancashire County.

I have also applied for the Preston Polytechnic course mentioned in the article, for which I am required to pay(!) and offer my own time (which to some extent I don't mind).

In September last I enrolled, at my own expense, for the BCS Part I examination (£84 in all) which the county do not even recognise!

It seems to me there are too many people shouting about shortages of teachers, not only in this area of the curriculum, but no encouragement or support comes out of it all.

Perhaps industry (which will eventually suffer due to this restriction) can exert pressure on the LEAs to see sense!

G. HARRISON
Shadsworth High School
Blackburn

Programmer's problem

ONE of the problems that seem to afflict me and probably countless other programmers is the forever rubbing out of lines or parts of lines whenever a mistake is made, resulting in bits of rubber all over the place.

There are so-called "magic" writing boards upon which the writing disappears when the sheet is lifted up. I was therefore wondering whether there are any A-4 size boards on the market on which writing would disappear merely by stroking the blunt end of a pencil against the offending error?

JOHN C. FAIRWEATHER
Analyst/programmer
Racal-Decca Navigation,
New Malden,
Surrey.

Liveware File

by Don

Matter of life and death

THE article (CW, March 5) describing cash flow statements, seemed informative and well written, but it made this strange statement: "By subtracting your expenses from your estimated income you will quickly see whether you are viable or not . . ."

This can only mean that your profits determine your life expectancy. Did the author really mean that?

He then explains: ". . . at the very least you will see what you have to achieve by way of income to become viable . . ."

Ignoring this repeated implication of imminent death for all low earners, it is wrong, surely, to suggest that what is not viable can become viable?

Perhaps it would have been better to have written: "By subtracting your expenses from your estimated income you will quickly see whether your business would be worthwhile or not . . . at the very least you will see what income you will need to cover your expenses."

GREGORY ADAMS-TAIT
London, W2

Siberian logic

THE villager of Uzbekistan (Michie's Privateview, March 5) was perhaps an even better logician than Michie gives him credit for. It could have been that Novaya Zemlya happens to be a region of the Far North where there is always snow, but never bears. This makes it rather difficult to decide what colour the white bears are in that region. Hence the villager's prevarication.

The fly on the wall no doubt also heard later that night the tavern-keeper say to one of his vodka-sodden regulars: "Sometimes I wish I were an English tavern-keeper. It is said that there everyone talks only of the weather with the tacit agreement beforehand that nobody is right. Another glass, do I deduce Ivan?"

ALWYN H. JONES
Senior Tutor in Systems Analysis
City University Business School
London, E.C.1

PROGRAMMERS PAGE

Basic for complete beginners

ONLY a few schools have a specialised computer science department, and in many, the whole subject is left to a hapless arithmetician to read up, one step ahead of his class. But some people have criticised do-it-yourself study of programming languages.

Just announced this month though, is a scheme to take the wind out of the sails of critics. It is a course in Basic programming designed to be taught by the non-expert, to groups of students. The difference lies in the video-base, claim producers Guild Sound & Vision of Peterborough.

The course contains 100 minutes of video teaching supplied on four cassettes in any of the standard formats. It is set up in short sections for step-by-step self study. The manual gives an outline of the complete course with hints on using it with micros.

The course, called Basic: An Introduction to Computer Programming, is available from May 1. Details from Peterborough 63122.

Electronic clicks and bleeps disturb the silence . . .

by Pamela Rowe

All the better to catch you with

AFTER the car assembly line and the supermarket, comes the library, as the most recent field of influence for the computer. Gone is the calm quiet, stirred only by the rustle of a turned page. It is replaced by the clickings and intermittent bleeps of the electronic age.

One of the latest to embrace the noisy chip is Colchester Library, administered by Essex County Library, which has spent about £400,000 on a totally new system to match the new building it moved into last year. Now, when you return a book, it is no longer a fairly slow shuffle through banks of tickets, but a quick flash with a light pen across a bar-code, emitting, if you pass muster, a high-pitched squeak.

On taking out a book the ubiquitous light pen reads off the bar-codes both on your ticket and the book, pairing them. This alliance may not be sundered until the magic pen of the return sequence has been waved.

The issuing machine can also be programmed to note an overdue borrower's number, and shrill out a warning if he tries to take out another. All the better to catch you with. Publicly shamed before the waiting queue, it would seem an ideal aversion therapy for readers.

However this isn't really the idea behind the system. As county librarian Barry Langston explained, work has been going on for three years in collaboration with Blackwell's of Oxford, and the main aim is to free staff from clerical duties so that they can help borrowers.

"Apart from that, all data is readily accessible to every library by using the database at County Hall in Chelmsford. Eventually, when everything's complete, each library will have the facility to operate alone or to tie into another."

Each night the memory disc containing all the information recorded on the issuing machine during the day is played to the main computer at Chelmsford. Book orders are typed out on a VDU and order forms and printed bar-code labels are simultaneously produced. These are sent off to the booksellers who return the books labelled up and ready to go on the shelves.

When all the libraries in the county belong to the same system, any book can be pinpointed on the microfilm catalogues in each building. That is, if there is any money left for books; and when you come right down to it that is what makes or breaks a library — the number and quality of the books.

Contributing to Year of the Disabled

BRITISH universities are making a concerted contribution to the Year of the Disabled — presumably because they are some of the last places where people can study projects of value, which are not necessarily commercially profitable. Last week Essex; this week Lancaster.

The Manpower Services Commission has funded the Microprocessor Unit of Lancaster University to develop special hardware for visually handicapped programmers — specifically for Roger Halhead who works in Netherfield, Kendal.

Halhead suffers from retinitis pigmentosa which effectively restricts him to a sort of tunnel vision. Several years ago, his deteriorating sight forced him to give up his training in accountancy. He attended an employment services centre in Scotland, and was recommended as having the potential for a career in computing.

A couple of A-levels later, gained in computer science and economics at Carlisle Tech, he was well on the way, studying computer programming at the Royal National Institute for the Blind in London.

Now 27, Halhead has worked for two years at K Shoemakers, Kendal, under the auspices of a scheme run by the MSC. Initially he was provided with a specially adapted typewriter, a tape recorder, and closed circuit television to help him work. However, there were further difficulties as the television set could not be linked to the firm's main computer.

George Lindsay, chief programmer and Halhead's boss, said: "Roger is a skilful programmer, and we wanted to help him overcome the problems caused by his deteriorating sight so he could continue working effectively.

"We approached a number of firms about Roger's problems before contacting Lancaster University, but they all said they would be unable to help because it would not be commercially viable for them to produce special equipment for one programmer."

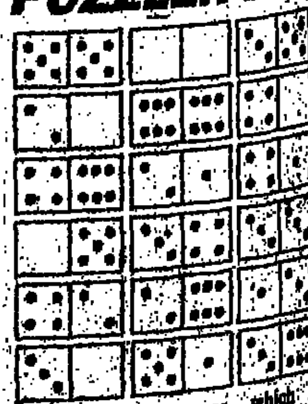
The MSC agreed to finance the project and the Microprocessor Unit started to develop the equipment. First, they built a device to enlarge the letters and symbols normally displayed by the computer operator, on to a special 17-inch screen. Following this, work is in hand on a speech synthesiser which will be built into the VDU and will toll out the words, symbols and numbers typed in by the operator, including any mistakes he makes.

"We began developing the terminal for K Shoemakers as part of a programme designed to help local industry in the area of microprocessor application," said Dr Peter Robinson, director of the Unit. "We are delighted to find the equipment has a much wider application and will be used to help the blind and partially sighted in other areas."

Tom Layden of the MSC concurred: "We will be able to supply on permanent loan these devices to people who are eligible under the MSC Special Aids to Employment scheme."

Halhead himself is now firmly in touch with the main computer, and is well pleased with the new terminal.

PUZZLER



THIS magic square, which is made up of 18 dominoes selected from a standard set of 28 pieces, has a Constant Total of 18 along each of the six horizontals, six verticals and two long diagonals.

The problem this week is to make up a similar square having the largest possible Constant Total, which is 23. Once again any 18 dominoes can be selected from a standard set. See page 47 for solution.

OP SPOT

by Paul Fisher

Not the winning limericks... but not bad for punchlines

CEEFAX, the BBC's teletext service, recently held a limerick competition, and over 3,000 entries were judged by Pamela ("Not The Nine-o'clock News") Stephenson and poet Gavin Ewart.

The winning lines will be broadcast on Ceefax and published in the Radio Times.

Op Spot has scooped three of the unsuccessful limericks . . .

An elegant young lady tutor
Sought match-making via
computer.

It said "You're unique,"
So she started to speak

To refute her computer to suit
her.

C.W.C-R

We have a young girl operator
Who swallowed her new
calculator.

Now, when doing a sum,
She just presses her tum

And the answer glows
on her equator.

RON MALEY

Sighed secretary Deborah
Deanes:
"Things have certainly changed
since my teens.
My evenings of ease
Are now spent punching keys
And working hours gazing at
screens."

TONY DURHAM

Judge Stephenson

How to charge for a call-out

OPS manager Dennis King has a problem. "I'm interested," he says, "in finding out about other sites which have a 24-hour call-out and on how they decide on compensation." Should anybody have any advice, write to him at May and Baker, Dagenham, Essex.

Brian Franklin heads a team of three in the operations support group. Between himself, Gary Dennis, Colin Wingrove and Ray Nicholson a 24-hour, five-day-a-week full cover is provided. Franklin reckons that they cope with at least one late night/early morning call every week.

They are paid normal rates of overtime at time and a half for the extra hours actually worked, but both Franklin and his boss agree that some kind of shift allowance should be paid for the regular unsocial hours.

Franklin says: "We tend to organise our social lives round the call-out rota."

At which point King added: "There should definitely be regular payment for the call-out service." So, in order to present a coherent case to his personnel department, he needs the advice of those who run similar systems.

King says: "I can't see a time when we won't need back-up at a higher technical level." An advantage of having a support team is that there are always two opinions when something goes wrong.

The necessity for the odd hours is due to May and Baker's heavy commitment to online work during the day. If the ops department doesn't have the databases in a fit state to get CICS up the following morning, they are liable to find themselves under siege by a bunch of irate users.

Operations support group leader Brian Franklin, with the beard, and operations manager Dennis King. In front of them is an IBM 4341 which was installed in December. It will be joined by a second 4341 in May.

More VDU tears

COMMON sense tells me that working in front of a screen is about as risky as peeling onions. It might make your eyes water but so what?

Jean Fox, of F International, disagrees and writes: "There may not be any real risk to peeling onions, but if using a VDU was anything approaching as unpleasant as peeling onions, I, for one, would not be prepared to do it for more than a quarter of an hour a week, at the very most.

"You do VDUs a disservice by using such a comparison."

Throughout the world (and this is an issue of global consequence) there is more time devoted to peeling onions than operating VDUs. Make no mistake about it, that means more tears, more cut fingers, more split nails and possibly a couple of amputations at the wrist every year.

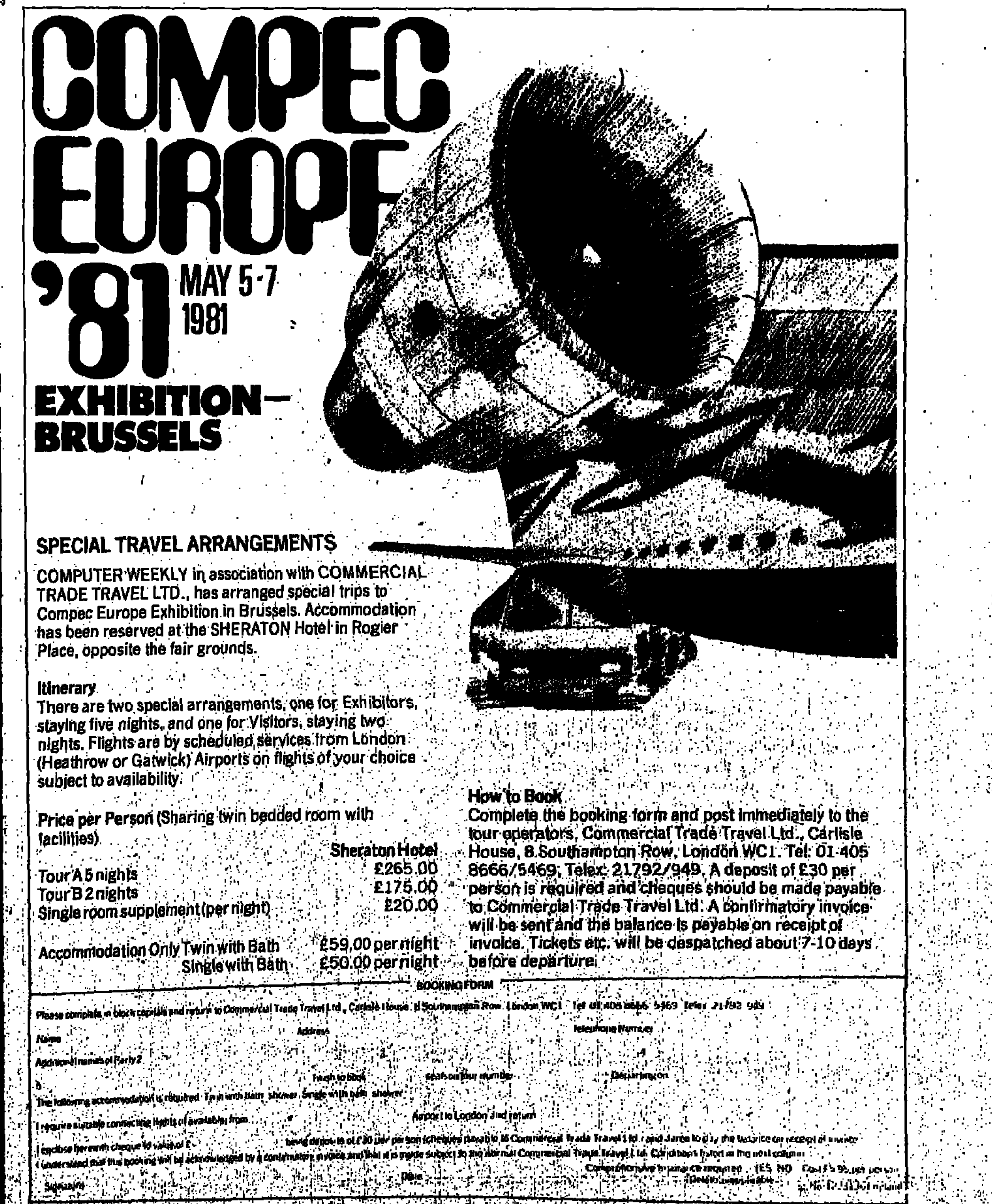
But where are the hefty tomes churned from the bowels of the World Health Authority and the Wigan Borough Council? How can catering managements ignore those numerous unrecounted acts of oniony self-dismemberment? Why does no politician take up the onion peeler's cause?

Meanwhile, in Canada, the case of Darlene Weiss is up before the Ontario Workers' Compensation Board. Although only 40 years old, she has eye cataracts. Her union, the Ontario Public Service Employees Union, says that the cataracts were caused by electro-magnetic radiation from the VDU she used for four hours a day between August 1978 and March 1980.

Her union sent her to a New York optician, Dr Milton M. Zaret, a man whose studies have led him to conclude that radiation from VDUs causes cataracts. Weiss' union is surveying its VDU using members with a question prepared by Zaret. The intention is "to prepare a detailed procedural guide for the use of VDTs".

Incidentally the following telex arrived the day before news of the Canadian cataract reached this office: "All references to 'workers' compensation' in the story entitled 'Canadian employee claims cataracts came from VDT use' (page 24) should instead read 'workmen's compensation'. Sorry for any inconvenience this causes." — Technology News of America.

If the board persists in considering Ms Weiss as a workman, she could suffer even greater inconvenience.



DATA ANALYSIS

Designing the logical structure of database

Section II – Part 3

of our series describing a
system design methodology

by Rosemary Rock-Evans

IN a previous article, access path analysis was described as a method of documenting the function's use of the entity model. Functional models were drawn for each elementary function showing the access path taken through the entity model.

The first stage in translating the entity model into database design is to select, from the global entity model, the subset required for implementation. This is achieved by drawing a complete functional model for all the elementary functions which are being computerised.

In Figure 1 such a functional model has been drawn using the hospital model as the example. It has been assumed that only the entity and relationship types shown are involved in the functions we are to implement.

The next stage is to map the entity types to record types and to determine how relationship types are to be represented. This procedure was discussed in the article on consolidation for database design.

Having established the data items in each record type and hence the record types, the options are: one record type to one file, and more than one record type to one file.

The decision on how this is achieved is dependent on the structuring limitations of the database. For example, with Total, option 2 is possible in variable entry files only. In IMS a "child" segment (record type) can be of many types. In Codasyl DBMSs it is possible for all file types.

The decision on whether to group more than one record type into one file is also dependent on the structure of the entity model. It would be foolish, for instance, to try to implement the structure shown in Figure 2 using Total, by creating record types for each entity type and then placing record types B and C in the one variable entry file Y, as it is then impossible to implement the relationship between C and D.

The structure of the entity model has therefore to be considered before any decision can be made about which record types are mapped to which file types.

The resulting record types and links must then be mapped onto the logical database. It is not intended to go into the rules and structuring limitations of every DBMS. Instead, some well-known and widely used DBMSs have been selected and a table (Figure 3) drawn up to show whether they can be used to map directly the structure represented by the functional model.

Since many DBMSs have been implemented using the Codasyl recommendations, for example, IDMS, DMS 1100, these have been grouped under the one heading "Codasyl" for convenience. (Several Codasyl committees were set up to recommend standards for DBMS development.)

In Figure 4 the DBMSs are compared to see whether the accesses required of the resulting structures can be directly implemented. The conventions used in the diagram are those used when drawing many DBMS logical structures (the notable exception being Total): a square box represents a record type (segment, etc), a line with an arrowhead, a link, and so forth.

There are usually several ways open to the database designer to avoid the structuring and access limitations of the DBMS.

Some of the principal ways are listed in Figure 5: he can create dummy "link" or "cross-reference" records, he can create a secondary index, he can duplicate the keys of the record types which are the owners of a relationship, and he can create dummy records and link paths to overcome the problems of optionality,

There is one further point which should be made before the topic of file design is closed. Sometimes a DBMS is not available, or the circumstances are such that only part of the entity model can be implemented using a DBMS. It is then necessary to use conventional files.

This can be done, but more emphasis must be placed on the direction of access and selection criteria. The techniques used to implement the models are much the same when mapping entities to records, but relationships have to be represented by using either concatenated keys or explicit pointers when describing member to owner relationships.

This topic will not be discussed further in these articles; it is sufficient to know that mapping is possible.

The database management system often does not directly map the structure of the functional model, or allow the accesses required. These restrictions can be overcome using the facilities offered by the DBMS (link records, secondary indexing, etc) but the design of a database is a more complex task than just placing link paths or secondary indexes where the DBMS does not map the structure directly. It is the very complexity of the task, requiring a specialist with high technical knowledge to design and tune an effective database, that has given rise to the job of database designer.

As we have seen, however, it is the analyst who should provide the database designer with all the essential data on which to base his decisions, and no database designer can produce an effective design without either a model of the environment he is mapping, or details of how that model operates in terms of the functions to be implemented.

The Data Analysis methodology was developed at CACI by Ian Palmer.

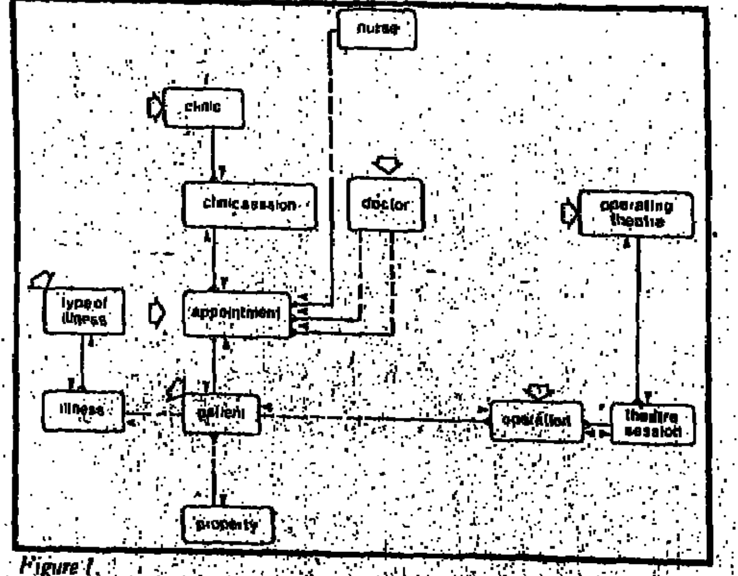


Figure 1.

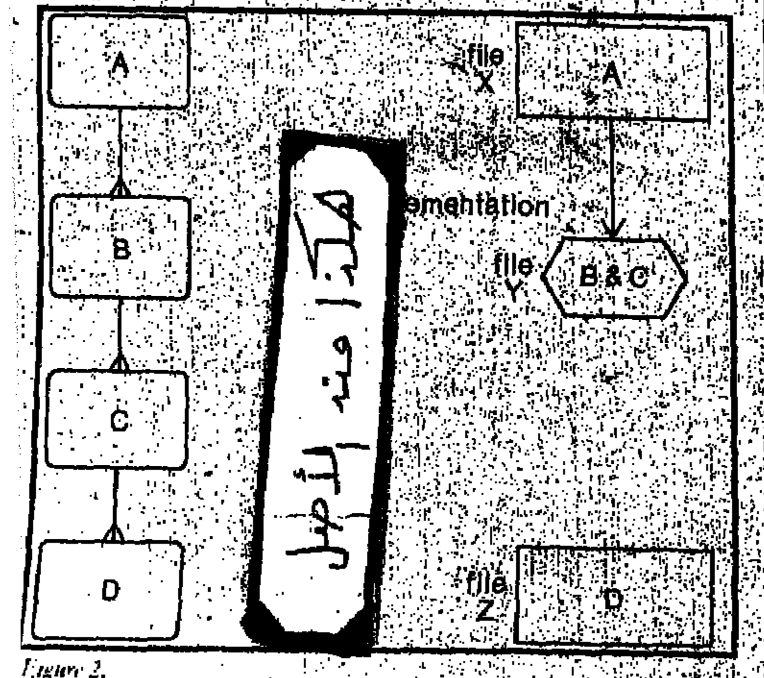
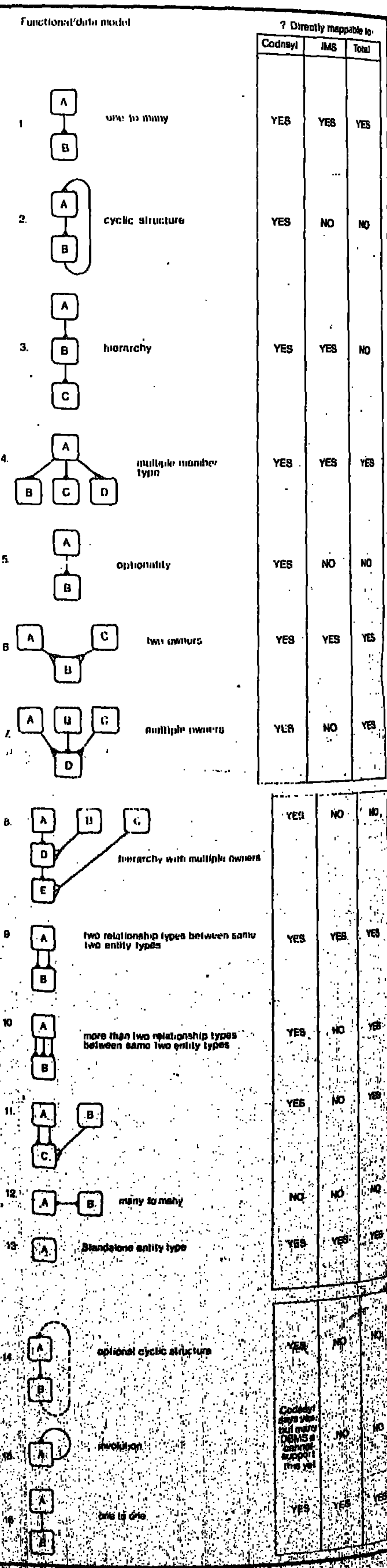
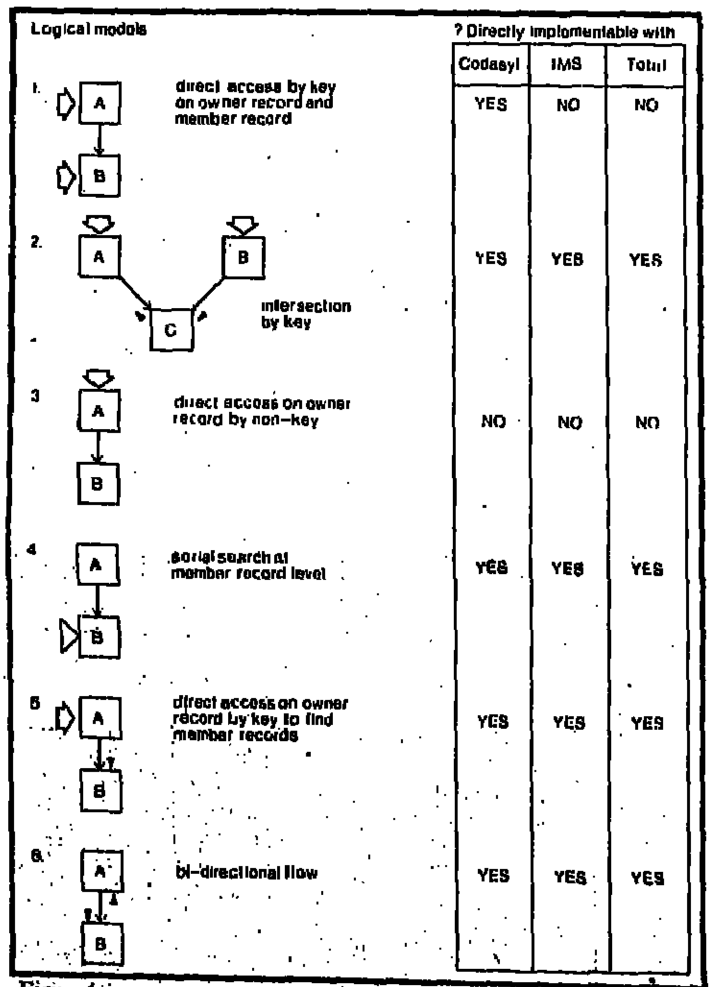


Figure 2.



Functional/data model	? Directly mappable to: Codasyl	IMS	Total
1 one to many	YES	YES	YES
2. cyclic structure	YES	NO	NO
3. hierarchy	YES	YES	NO
4. multiple member type	YES	YES	YES
5. optionality	YES	NO	NO
6 two owners	YES	YES	YES
7. multiple owners	YES	NO	YES
8. hierarchy with multiple owners	YES	NO	NO
9 two relationship types between same two entity types	YES	YES	YES
10 more than two relationship types between same two entity types	YES	NO	YES
11.	YES	NO	YES
12. many to many	NO	NO	NO
13 Standalone entity type	YES	YES	YES
14 optional cyclic structure	YES	NO	NO
15 involution	Codasyl says yes but many DBMSs cannot support this yet	NO	NO
16 one to one	YES	YES	YES

Figure 3.



Logical models	? Directly implementable with: Codasyl	IMS	Total
1. direct access by key on owner record and member record	YES	NO	NO
2. intersection by key	YES	YES	YES
3 direct access on owner record by non-key	NO	NO	NO
4 serial search at member record level	YES	YES	YES
5 direct access on owner record by key to find member records	YES	YES	YES
6. bi-directional flow	YES	YES	YES

Figure 4.

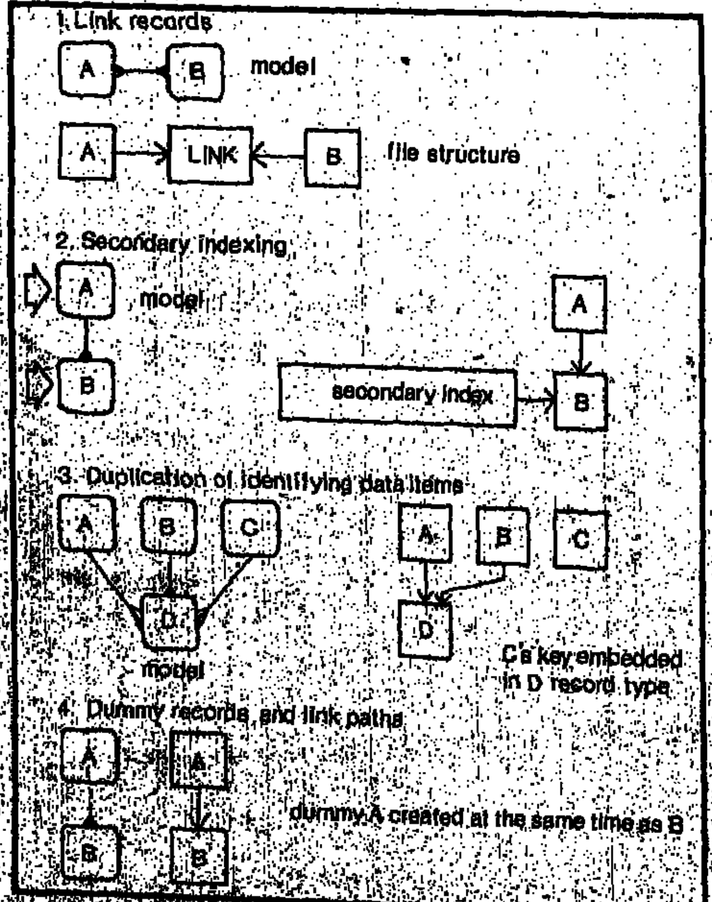


Figure 5

PEOPLE

Ex-Hallmark men from WP company

A NEW company has been formed to develop the capabilities of the word processor as a management tool. Called Microtex, the company is headed by **Michael Tait** and **Richard Jones.**

The company will deal in AM Jacquard equipment, to be marketed to institutions and corporations solely within the sphere of word processing, information storage and retrieval and electronic mail. According to the company, word processor related software application packages will offer facilities beyond the limits of typical systems.

Tait, Jones and the remainder of the company team worked for Hallmark Business Systems before it went into receivership. Tait handles the marketing side of the business, and Jones the technical side.

The company has had a good start, according to Tait, with the first month's sales over budget.

Microtex is at Aldwych House, Madeira Road, West Byfleet, Surrey. Telephone: (09323) 53151.

Tait

Jones

Top job at Marconi

A TECHNICAL director has been appointed at Marconi Communication Systems. John Craen has been involved with Marconi since he joined Elliott Brothers, subsequently to become Marconi Space and Defence Systems (MSDS), in 1967. Before that he was with EMI, working on various radar projects.

He worked as project leader and became involved in satellite research and development at Marconi Space and Defence, and in 1972 became divisional manager of the military communications division of the company. In 1976 he was promoted to general manager of the Brown's Lane, Portsmouth unit of MSDS.

■ **Alan Sharma, Ronald Stolle, Mike O'Shea and Peter Rand** have all taken appointments at Nokia, the UK business systems division of the Nokia Group of Finland. Sharma has joined as senior customer engineer. He was formerly with Perkin Elmer. Stolle joins from Ampex as senior programmer. O'Shea, previously with Hamilton Rentals, joins as sales executive and Rand becomes responsible for technical liaison. he was previously a telecommunications engineer with Marconi.

■ **Dr Jose-Marie Griffiths** has been appointed associate consultant at Kent-Barlow Information Associates. She is currently working in the US with Kings Research Inc on a series of special studies for the US Department of Energy.

■ **Torsten Schmidt and Finn Verner Nielsen** has been appointed to head maintenance engineering and software development at RC Computer, the UK subsidiary of A/S Regnecentralen of Copenhagen. **John Miskelly** joins the company as business development manager. The appointments have been made in preparation for the introduction of new products throughout 1981.

■ **Bob Matthews** has joined Data General as management information services manager. He was formerly data processing manager at Alfred Dunhill. Also joining the company is **Bill Cadogan**, who has been appointed systems engineering manager. He joins the company after 14 years with ICL, where he served most recently as customer services manager for Southern Europe.

■ **Tim Worley** has joined Rediffon Computers as products manager of the manufacturing division. He was formerly production control manager with Eurotherm.

■ **Joseph O'Donoghue** has been appointed senior consultant in the newly-formed Medical Systems Group of CACI Ireland. O'Donoghue was formerly with the experimental Medicine Unit at University College, Galway.

■ **Christine Pearson** has joined Systems Resources as consultant. She was formerly a management trainee at Unilever Computer Services. Also joining as consultant is **John Casey**, previously an analyst programmer for Temp Computer Services.

■ **Trevor Lewis** has been appointed manager of the software products division of Commercial Inventory Service. Also moving to this division is **Paul Southernwood** who is responsible for training and support.

MEMOREX has appointed **Dr Alfredo Mazza** as vice-president of international operations support. He will be responsible for consumer products, customer engineering, marketing and sales support, OEM sales and the Memorex Liege manufacturing plant. For the last two years, Dr Mazza has been president of Montefibre in Italy. His 25 years in the computer industry includes a 13-year period with IBM in Europe and North America.

Mazza

■ **Brian Nolan, Frank Fensome and Ian Ball** have been appointed directors to the board of Ferranti Computer Systems. All are general managers of operating divisions of Ferranti Computer Systems.

■ **Roy Gibson**, former director-general of the European Space Agency (ESA) has joined Logica as part-time special consultant in space and defence.

■ **Terry Davis** has been appointed Northern regional support manager at Computer Automation. He was formerly technical services manager at Fine Art Development in Preston.

DIARY

MARCH 31

Silvanus P. Thompson lecture, The Changing Screen IBA. IEE. The College, Regent Circus, Swindon, 2.00 and 7.00. Tickets from D. Bateman, Square D Ltd, Cheyney Manor, Swindon SW2 2QG.

Micros in education. BCS. BCS HQ, London. 2.00.

APRIL 2

Euronet Diane. BCS Chester and North Wales branch. Crest Motel, Wrexham, 7.30.

Job Control Languages Working Group conference – Micro to Mainframes – Tailoring and Standardisation. BCS JCL Group. Institute of Education, 20 Bedford Way, London WC1. £20 members, £25 non-members. Applications and cheques to the BCS Accounts Dept.

APRIL 3

Computers in general practice – the Scottish experience. BCS Medical Group (Scotland). University Medical Building, Aberdeen. Details from R. B. Marshall on 041-332 6822 ext 19.

APRIL 6

The electronic office of the future. BCS East Anglian branch. Eastern Electricity Central Accounting Offices, Russel Road, Ipswich. 7.00.

Mainframe or linked minis? BCS Hampshire branch. Simpact House, Shedfield, Southampton. 7.30.

APRIL 7

Meeting. Gino Users Group. Computer Centre, Mathematics Building, Bristol University. 10.15.

Demonstration by members of the Medway Amateur Computer Club. BCS Kent branch. King's Head Hotel, High Street, Rochester. 7.30.

CONFERENCES

■ A SEMINAR on CAD/CAM systems is to be held by the National Engineering Laboratory on April 1-2. It is aimed at technical staff using or considering using computers in mechanical engineering design and manufacturing applications. The first day will be devoted to a presentation of standalone systems, dealing with NC graphics, surface description and machining, geometric modelling and planning and estimating. Day two will cover integrated turnkey systems made up using the building blocks described on the first day. Details are available from P Collier, National Engineering Laboratory, East Kilbride, Glasgow. Tel: (03552) 20222.

■ DP budget cutbacks involve DP managers having to meet application deadlines with fewer staff. Calculations show that proprietary software generally costs about one-tenth of the price for developing similar systems in-house. A series of seminars which will assess the time that can be saved by installing an integrated range of financial application software has been organised by MSA. The conference will address the problems of evaluating and installing proprietary packages such as general ledger, financial forecasting and modelling, fixed assets accounting, Q-Pac, payroll and purchasing. The seminar takes place on April 22 at the Sheraton Skyline Hotel, London Heathrow. Details from Dan Schmidt, on Maidenhead (0628) 71011.

■ THE business and technical implications of office automation will be discussed at a conference organised by **BIS Applied Systems** at the Cafe Royal, London, on May 6. The conference will examine factors such as productivity, quality of work, staff training, staff turnover and the form of future products and applications. The conference may be useful to those who have already undertaken office projects and wish to review progress to date, and to those considering a project for the first time. Speakers have been drawn from the Computing Services Association consortium which produced the text processing study sponsored by the DoI. Fee is £120 + VAT. Further information from Jackie Preuss at BIS Applied Systems on 01-262 9237.

■ COMNET 81 is an international symposium on computer networks and teleprocessing systems, to be held on May 11-15 in Budapest and sponsored by IFIP and UNESCO. Enquiries should be directed to Comnet 81, Symposium Secretariat POB 240, H-1368 Budapest, Hungary. Tel: (361) 112-027.

Director for BIS

A DIRECTOR has been appointed at BIS Software. He is **Melvin Haskins**, who has also been made managing director of BIS Banking Systems.

Haskins joined BIS Software in 1974, working in a number of custom-built banking systems and telecommunications projects, before becoming a consultant for early Midas systems.

In 1977 he was seconded to the BIS New York branch, and in the following year was appointed Midas implementation manager in London. He became manager of the company's London branch in 1979 and later that year was appointed an associate director of BIS Software.

Micom adds to the board

FOLLOWING Micom System's acquisition of Borer Electronics, the company has added three directors to the board. **Ken Baynton** and **Peter Dann** have been promoted to technical director and finance director respectively. **Russ Dopson**, who recently joined the company from Scicon Computer Services, has been appointed sales director. These appointments double the board complement giving Micom-Borer four UK based directors.

A BRITON has been appointed managing director of Inmac UK, the British subsidiary of the US-based mini and microcomputer suppliers. **Michael Weedon** was previously general manager of Nashua International's sales division. During his ten years with the company he set up a direct distribution network for magnetic discs and tapes in the UK, France, Germany and Holland.

■ **Mike Lawrence** has been appointed UK manager, application software development at MSI Data International. He joins the company from BOC where he was consultant to the BOC Datasolve management Sciences Group.

■ **Penny Joyce** has been appointed manager of financial services at TSE Computer Supplies.

■ **Chris Finch**, formerly a sales executive with CPP, has joined Computer Associates in Maidenhead. He will be responsible for all product sales in the South West.

■ **Archie Currie** has been appointed marketing executive at Linlathen Computer Services. He joins the company from Worcester Royal Porcelain, where he was production manager.

■ **Nigel Simpson** has been appointed product marketing manager for the UK and Scandinavia at Hitachi Electronic Components. He was previously with Jermyn for five years.

Lavigne

Gallagher

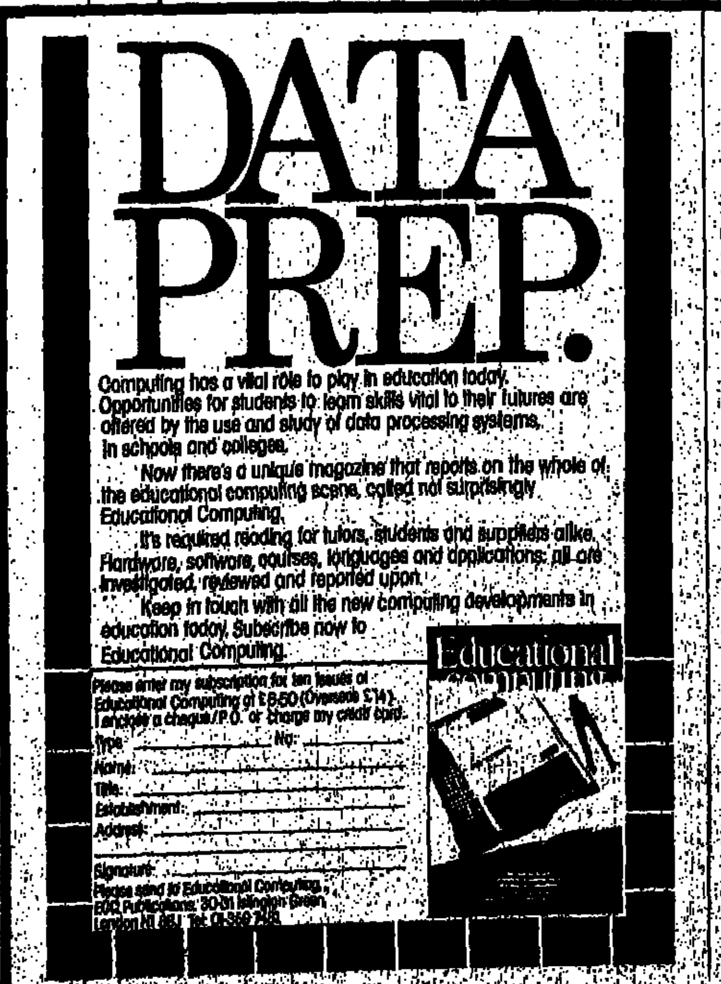
■ **Sean Gallagher**, formerly European business manager with Tektronix, has been appointed sales manager at Hamtek. Also joining the company is George Lavigne, previously at the Dutch defence research organisation TNO.

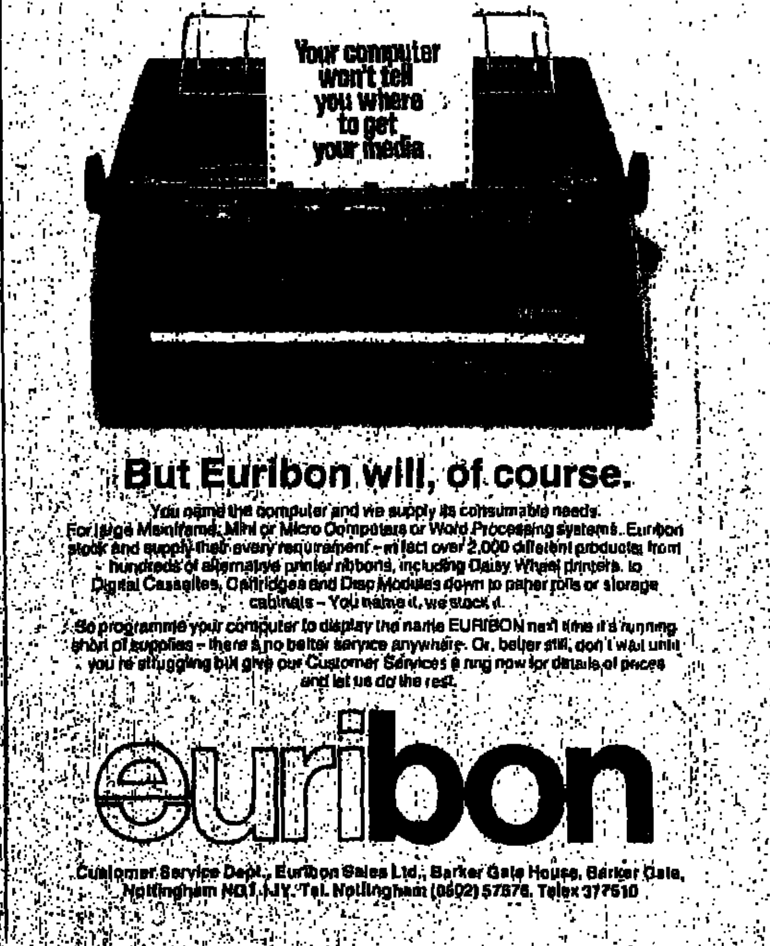
■ **Colin Evans** has been appointed sales manager at Amplicon. He was formerly sales engineer at Analog devices. Also joining Amplicon is **Reg Eyres**, who becomes inside sales engineer. He was previously in sales support at Chessel.

■ **Dan Clay** has been appointed South Eastern sales manager at Micro Five in Atlanta. He previously worked as sales manager at Quantel and Minicomputer Systems.

■ **Robin Carr** and **Andrew Beavis** have been appointed sales executives at CTL's business computer division. Carr was previously branch manager with Nixdorf in Manchester and won the company's Top UK Salesman Award in 1977. Beavis joins from Honeywell where he was a business systems salesman.

■ **Henry Green**, who was UK sales manager of Wiggins Teape's fine papers division, has been appointed general manager of Hovat. Heading up the company's new sales team is Trevor Bowles. He joins Hovat from Wiggins Teape Paper's Bristol branch where he was field sales manager. **David Doorbar** is area sales manager for London, East Anglia and the East Midlands. Yorkshire and England cricketer **Geoff Cope** is area sales manager for the North.





A package to speed up floppy disc output

A PERFORMANCE enhancement package said to speed up floppy disc output by three to five times and boost storage efficiency by 30 per cent, is available for the Equinox Series 5000 and 8000 microsystems.

The Turbocharger package provides read-after-write verification, automatic and dynamic sensing of disc type and system start-up from any drive.

It also allows the disc operating system to configure dynamically for the amount of RAM installed, and RAM errors are diagnosed automatically on start-up.

The Turbocharger speed advantage is achieved by multi-level buffering of disc I/O, using least-recently-used (LRU) buffer assignment and other optimisations.

This should provide a multifold reduction in the number of physical disc accesses.

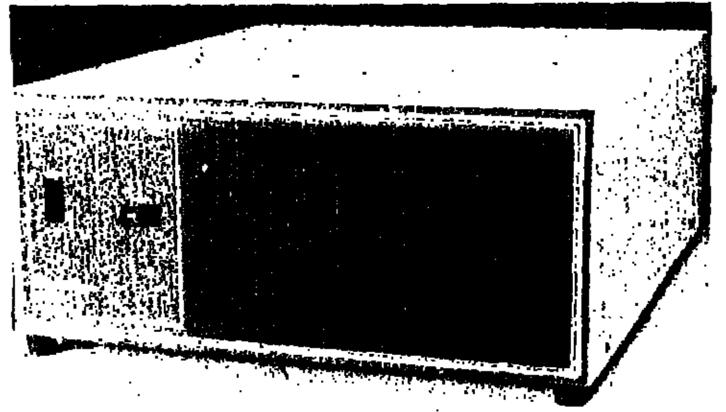
Disc capacity is increased by using larger physical sector sizes. For example, an ordinary 8-inch single-sided, single-density can accommodate eight 512-byte sectors per track compared with the more common format of 26 128-byte sectors per track.

Additional capacity is accomplished by eliminating reserved "system tracks" required by standard CP/M, the result being a 306-K-byte capacity on a single-sided, single-density disc compared with 241K for standard CPM.

For double-sided and double-density recording, the Turbocharger permits more than 1.25MB on 8-inch discs and 400K on 5-inch discs.

The Turbocharger is optional on the Equinox Series 5000 and 8000 microsystems and costs £150 plus VAT.

Equinox Computer Systems Ltd (CW), Kleeman House, 16 Anning Street, New Inn Yard, London EC2A 3HB. Tel: 01-729 4460.



Equinox's Turbocharger is designed for the 5000 and 8000 microsystems.

Graphics for all seasons

Terminal Display Systems' 6212 high performance colour graphics terminal.

THE 6212 high performance colour graphics terminal is the latest addition to the Ramtek 6000 family available from Terminal Display Systems of Blackburn.

This terminal is said to have a wide range of applications including business graphics, automation control, management information systems and command control displays.

With a 640 x 512 resolution, the 6212 should provide high definition display and users whose graphics have high vector content will need the optional hardware vector generator, designed to meet rigorous drawing requirements.

By writing vectors at 0.8 micro seconds per pixel the generator should give a high level serial performance comparable with DMA parallel driven systems.

The serial RS232 interface will operate at speeds up to 19.2K baud.

Terminal Display Systems (CW), Philips Road, Whitebirk Estate, Blackburn BB1 5TH. Tel. 0254 676921.

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Sophisticated filters for sensitive uses

TYPES FR 64 and FR 114 mains RFI filters from Schaffner are designed to protect sensitive electronic equipment and systems from mains-borne interference produced by such phenomena as switching surges, circuit breakers and thyristor-controlled equipment.

These multi-stage filters, incorporating an earth return choke to block interference entering over the earth lead, are screened in metal housings and effective over the 150kHz-300MHz frequency range.

Rated at three amperes, the FR64 is provided with one 13A socket outlet while the FR 114 is rated at 6A with two paralleled outlets. A miniature automatic circuit breaker with luminous on/off switch should ensure both safety and ease of use.

The FR 64 and 114 filters have high attenuation of 80 dB and appear suitable for a wide range of applications, ensuring a clean power supply to computers, instruments and laboratory, office and educational equipment.

They can also be used to suppress interference from sources such as electric typewriters, unsuppressed test circuits such as thyristor circuits and prevent such interference from reaching the mains supply.

Available from Schaffner's UK distributors Lyons Instruments, the current 1-9 prices (ex works, VAT additional) are £48 and £65 respectively for the FR 64 and FR 114, with price reductions for 10 or more.

Lyons Instruments (CW), Hoddesdon, Herts. Tel: 09924 67161.

The FR 114.

Versatile tape prep system launched

TELEPRINTER Equipment Ltd has marketed the versatile NC-1000 integrated CNC tape preparation system in the UK, employing both EIA and ISO codes and capable of interface on parallel, RS 232C and current loop devices.

It can be used with most machine tool control CPU or time-sharing systems. TEL maintains that the NC-1000 is three to seven times faster than a TTY-based time share system and will result in lower line charges.

The assembly comprises three interlinked devices: the DEC LA34 keyboard terminal, NC-1 microprocessor-based code converter module and the LRP 300 paper tape reader/punch.

As it is capable of receiving EIA and ISO codes and converting one into the other, NC-1000 can be used with machines using both tape formats.

Editing capabilities permit searching block by block, revising or editing existing programmes and/or the creation of new formulations.

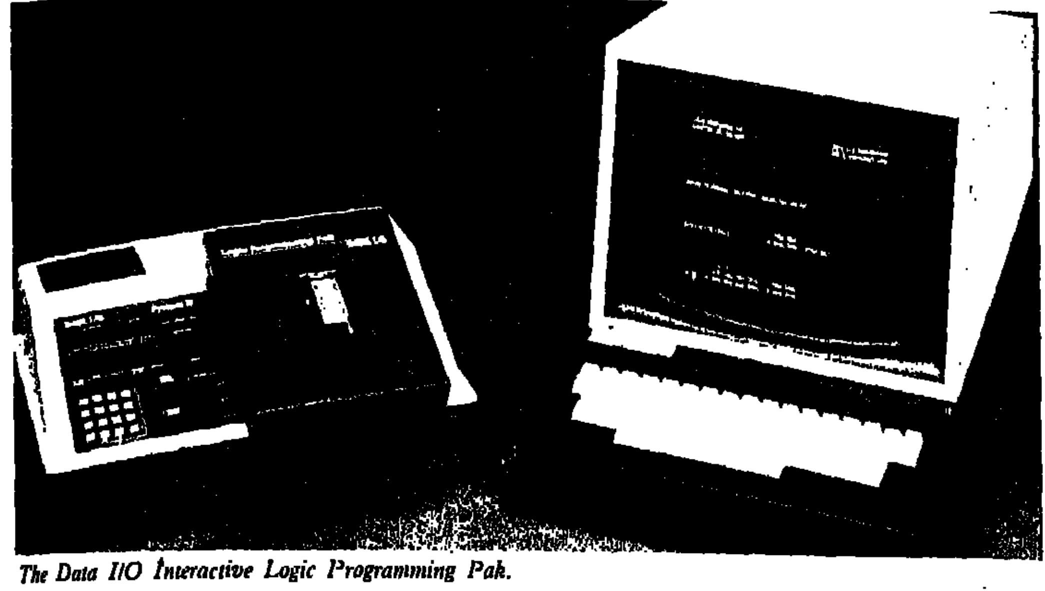
Teleprinter Equipment Ltd (CW), Akeman Street, Tring, Herts, HP23 6AJ. Tel: 044282 4011/9 and 5551/9.

Rair text quality printer

RAIR announces the addition of the Diablo Model 630 text quality printer to its advanced terminal products catalogue as latest in the line of daisy-wheel printers incorporating features of the well-established Hytype range but at reduced cost.

The Model 630 incorporates a new version of the Hytype mechanism improved to allow both plastic and metal print wheels to be used on the same printer.

Rair Ltd (CW), 30-32 Neal Street, London WC2H 9PS. Tel: 01-836 4663.



The Data I/O Interactive Logic Programming Pak.

Pak speeds FPLA programming

AN Interactive Logic Programming Pak for Data I/O's System 19 PROM and Logic Device Programmer, has been designed to speed the programming of Signetics FPLAs, based on Signetics 28-pin Integrated Fuse Logic (IFL).

In principle, bi-polar logic devices are programmed using the same fuse-link techniques applied to the programming of PROMs. The process involves the selective blowing of fuses to produce the desired pattern. However, with a logic device, it can be difficult to know which fuses to blow.

Normally, the desired output levels are defined by producing specified input combinations, then representing these functions in a State Table. Once the logic functions are defined, information must be translated into a form in which each bit represents a device fuse. This is usually done on the manufacturer's logic diagram.

The Interactive Logic Programming Pak contains software that does all the translation automatically. Equations are entered by VDU. It removes manual translation and speeds programming.

Microsystem Services (CW), 11 Duke Street, High Wycombe, Bucks HP13 6EE. Tel: (0494) 41661.

Intelligent terminal has wide range of uses

AN INTELLIGENT terminal from Data General offers OEMs and end-users MicroNova computer power for a wide range of applications.

Model 5100 is available from the Special Systems group and can be used as a stand-alone MicroNova system or cluster controller. It can also be used as a remote intelligent subsystem with downline loading, local disc or diskette storage.

It uses a MicroNova MP/100 backplane, permitting the use of MP/100 peripherals and interfaces, including diskettes, discs and communications options.

There are nine 5100 models, separated into two basic 5100B and 5100M versions, the 5100B based on the MicroNova Board Computer (MBC) line with four expansion slots, while the 5100M is based on the MP/100 microcomputer with three expansion slots.

Hardware and software are designed into an integrated package with the Dasher 6093 video display terminal used as a system console for the Micro Nova computer.

Small business systems based on the 5100B and 5100M can handle an impressive workload when assisted by options such as peripheral memory, disc, diskette, or mag tape, terminal printers and line printers.

Communications options include asynchronous and synchronous line interfaces, multiplexors, CRC generation and checking and 801C auto call interface. The communications hardware is complemented by RJE-80, HASP II and X.25 software.

The 5100 display has a 12-inch screen (80 columns by 24 lines) and features direct cursor positioning and screen sensing.

Prices range from £3,125 and delivery is 90-120 days after receipt or order.

Data General (CW), Hounslow House, 724-734 London Road, Hounslow, Middlesex TW3 1PD. Tel: 01-572 7455.

Hardware House launches

TWO products have been added to Hardware House's range.

New to its word processing range is Quill 1. This combines all the features of the Solitaire/WP word processor with the large character, bar code and bar chart capabilities of the programmable printing machine.

Quill can be installed for stand-alone labelling applications. The word processing software provides editing, storage and retrieval facilities, with draft printing of up to 300 lines per minute.

The Solitaire business system is also available, which uses a Basic language dialect known as Micro Business Basic.

A range of applications software packages are available to systems builders for use as seed software for their customers' own applications.

Hardware House (CW), Church Road, Burgess Hill, Sussex. Tel. (04446) 2519.

Silencer for printer

THE LATEST acoustic enclosure silencer from Power Equipment is designed to reduce the noise output of the recently introduced Centronics 737 dot matrix printer.

Up to 80% noise reduction is claimed for the enclosure and the unit is designed to allow easy operator access to the machine, accommodating three-way letterhead, fanfold and roll paper handling facilities.

The silencer consists basically of a compact, smartly finished metal casing with hinged transparent acrylic front and top section for viewing and access.

High density acoustic foam is bonded to interior surfaces, which absorbs noise and damps out vibration. The lid panel lifts for access to the power switch, online/local switch and paper feed controls.

Installation may be accomplished within five minutes, and the bottom section of the enclosure, a heavy gauge steel tray covered in dense foam, is placed below the printer.

The main casing is placed over the machine and located on the base tray. Slots are cut in the casing for power and signal leads so that the printer may remain operational during fitting.

A small whisper quiet fan is fitted as standard, designed to maintain internal temperature within the printer's operating range and an optional matt black tubular metal stand is available.

The Power Equipment Co (CW), Kingsbury Works, Kingsbury Road, London, NW9 8UU. Tel: 01-205 0038.

Encoder for plastic cards

NATIONAL Business Systems of Canada has introduced the NBS Model 500 encoder, designed to provide automatic error-detection.

The machine has a VDU and matrix printer built in as standard and a motor-driven read/write mechanism whose constant speed and precise registration are said to ensure accurate entry and data read-back.

The Model 500 is a stand-alone, desk-top machine designed to encode and read all three standard ISO magnetic stripes on plastic credit and cash-dispensing cards, or on similar cards used for security or job-processing purposes.

It will simultaneously complete data from all three tracks on the 5-inch diagonal (130mm) VDU screen. Print-out on demand gives an immediate hard-copy record of encoded information and the machine can be programmed to accept special data formats; it may also be linked to an embosser or a mainframe computer.

Controls comprise a standard typewriter keyboard with additional control-keys, plus ten separate single-function keys and LED indicators show the machine's status at any moment.

NBS Division of Lanyard Ltd (CW), 214 Station Road, Addlestone, Weybridge, Surrey KT15 2PH, England. Tel: Weybridge 53291.

Software for Superbrain

THE Business Desk software package, developed and marketed by Paxton Computers is available for smaller disc capacity microcomputers.

Paxton claims the Business Desk implementation on a two drive quad density Superbrain to have a capacity in line with the requirements of the typical small business.

It is written in CIS Cobol, is suitable for implementation on any CP/M based microcomputer and costs £2,400.

Paxton Computers (CW), 26 New Street, St Neots, Huntingdon, Cambridgeshire. Tel: (0480) 213788.

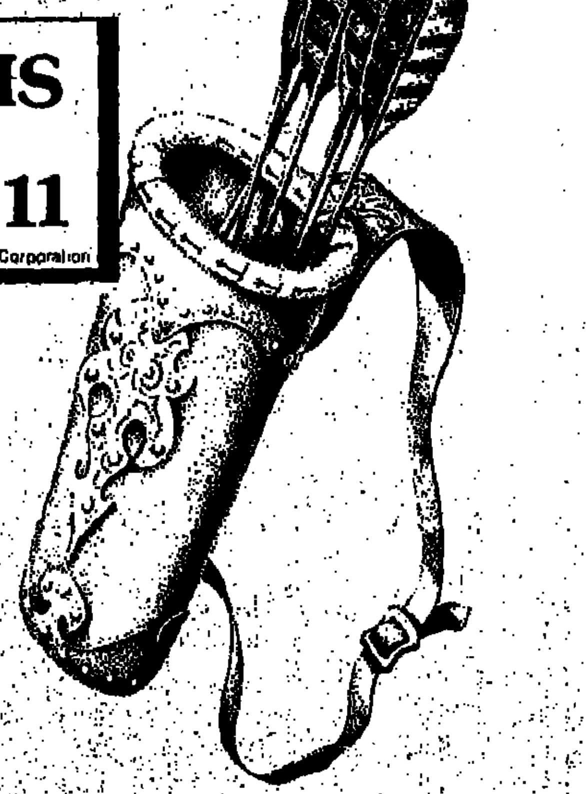
Privacy for Telex users

MERCK and Hollander of Pangbourne, has launched an encryption terminal for Telex users with full screen-edit facilities.

Designated HI-TEX System 2800 the equipment provides a method of preparing private (encrypted) Telex tapes in privacy with the advantage that the equipment can also produce screen-edited standard telex tapes.

Telex messages can be prepared in the executive office and sent in encrypted form for transmission.

Merck and Hollander Ltd, (CW), 11 Reading Road, Pangbourne, Berks RG8 7LR. Tel: 07357 2151.



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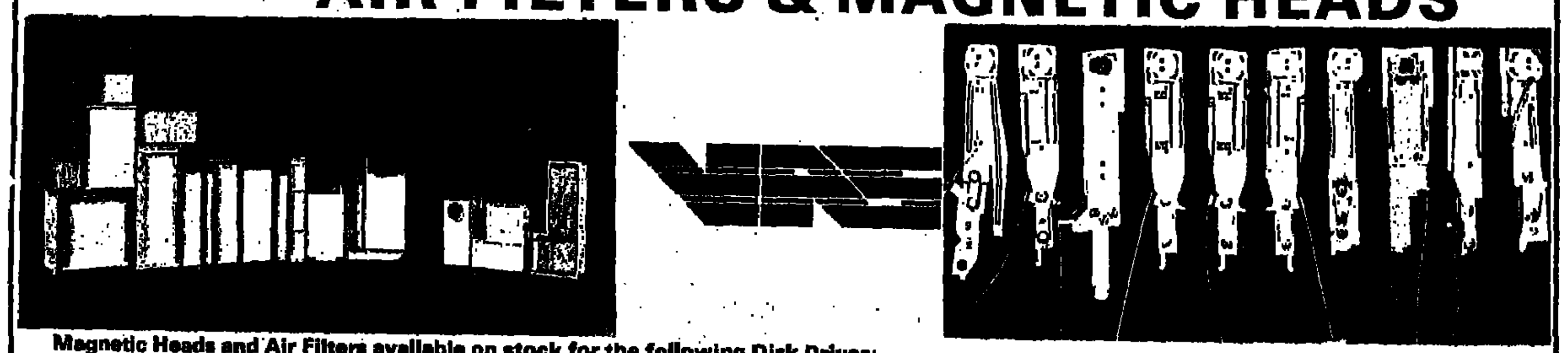

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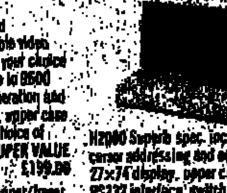

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The Peripheral Suppliers' Exhibition will be held on April 1-3. This three-page feature covers some aspects.

Solution for users who are not ready to compromise to get what they need

The Peripheral Suppliers' Exhibition will be held at the West Centre Hotel, London between Wednesday, April 1 and Friday, April 3.

Here Nick Enticknap looks at points in favour of terminal customisation, and Alan Simpson considers the contribution of plug compatible manufacturers. Mike Keeling, head of Cambridge Consultants' printing systems group, and its senior engineer, Graham Martin, review ink jet printing, one of the latest developments in printing technology.

by Nicholas Enticknap

TERMINALS come in all shapes and sizes with many different functions and a wide range of prices. The sharply falling price of memory means that they are becoming more intelligent and more flexible.

Yet, as with program packages, the need for manufacturers to design widely applicable products for sale in large volumes means that many users have to compromise between what they want and what they can have. The lower the user's budget, the more this is the case.

Some users are not prepared to compromise. They calculate that paying a bit more in the first place to have their terminals specially tailored to their particular application is going to produce savings in operational costs in the longer term. And that initial cost can be very low, a matter of something less than a thousand pounds in all.

One company which specialises in terminal customisation is Delta Data Systems, DDS. Its UK subsidiary has now been in operation for nine years and has built up a base of 200 customers.

Sales manager Bruno Tesia says that the company will take on comparatively simple customisations for small orders. Extensive jobs, those involving a software charge of perhaps £10,000 to £15,000, will be performed for customers with applications for as few as 30 terminals.

What sort of applications justify the use of customised terminals? Some are fairly straightforward, where the user wants to employ an unusual transmission code, for example, or where he wants a forms-handling capacity built into the terminal (as opposed to being controlled by an online mainframe).

> **The basic terminal is pretty powerful before customisation starts.**

One customer wanted the terminal's memory organised not in the usual paging format, but in accordance with his own file structures. Another wanted a terminal which could display both Roman and Arabic script, together on the same screen if required. As Roman script is written from left to right and Arabic from right to left, the software to enable the screen to follow the rules of whichever script was in use was rather complex.

Another customer wanted to access an online database via a large number of terminals in such a way that each could conduct a parameter-driven search, and then extract the relevant data and load it into the terminal for offline scrutiny. Others are not.

Then there have been many cases where customers have had specialised security requirements.

All these examples relate to applications where the terminal is expected to do a lot of work, so the basic product is pretty powerful before customisation starts. Based on the Texas Instruments 16-bit 9900 micro, it provides such standard facilities as the ability to store multiple character sets (there is provision for up to 900 different displayable characters), the ability to design the user's own special characters, and a multiple-split screen capability.

This means that the screen and/or memory can be treated as up to eight individually operable areas, permitting for example an interrupt to be handled in one part of the screen while work being processed is maintained intact in another.

Sample applications are in message switching, where an incoming message can be displayed while elsewhere on the screen another is being edited, or in text processing, where new text can be created in one part of the screen, either by copying or by new composition, while the original text is retained on display in a different part.

> **As a by-product, there is the advantage of putting the computer power where the action is.**

Another standard facility is the provision of two independent data ports, one for connection to the host mainframe and the other which is usually used for attaching a printer, but can be adapted for almost any other peripheral, such as a bar-code reader, with minor changes to the software.

The inclusion of these facilities in the basic terminal used for customisation contracts means that the customisation work itself is minimised and the bill is therefore lower, though the price of the terminal is considerably more than that of a basic VDU.

Another facility that users find difficult to obtain is emulation of non-IBM protocols. One request to DDS for a custom-built Burroughs TD830 emulator has turned into a standard product. Bruno Testa says that the Delta 2830 differs from other similar products in being totally compatible and not merely a line protocol emulator.

Burrough's' problems in delivering its own terminals have made the 2830 a best-seller for DDS. The company has taken the hint and is shortly to introduce a similar product designed to emulate Univac terminals.

When should a systems designer think about using custom-built terminals? In some cases, such as a requirement for unusual peripherals or software emulators, the decision makes itself. In others, it is a question of balancing costs here against costs there, and then it is important to assess accurately what the real costs are.

A major area of savings is in line and transmission costs and the cost of tying up the mainframe, achieved by transferring work into the terminal. Incorporating powerful validation routines not only reduces mainframe usage but also ensures that data entry errors are trapped and corrected at source.

As a by-product there is the traditional distributed processing advantage of putting the computer power where the action is. This is not so easy to quantify but should result in greater local autonomy and increased staff morale.

In many cases, some or all of these benefits can be obtained by using off-the-shelf intelligent terminals. In others, the user can alternatively rely on the power of the host mainframe or on down-line loading of software.

But there are still many applications where the optimum system cannot be constructed from the hardware and software components offered by the mainframe manufacturer and the independent suppliers. In these cases customisation can be more economic than either of the alternatives, compromising with a less than optimum solution or designing your own equipment.

Purchasers of custom-built terminals tend to be well organised companies with a clear idea of what they want and what it ought to cost. Delta Data Systems' list includes some very large organisations such as the BBC, British Rail, ICI, Midland Bank and the Post Office. Other customers include the Banque Nationale de Paris, Oxford University Press, Press Computer Systems and the Robert Horne Group.

To satisfy these customers, DDS is organised in a rather unusual way for a hardware vendor, in that it is very much a service company rather than a product company – indeed, the sales department was the last to be formed and is still very small. The largest part of the firm is the customer service department, consisting of engineers, customer support staff and quality control technicians.

This provides a context for managing director Ken Rumsey's observation, "It is not the easiest thing to find customers for our services, but once we've got them we tend to keep them." Evidence for this latter claim is that the company's first UK customer, Press Computer Systems, is still a current customer five product generations later. The very first terminal the company sold is still in operation.

In commercial terms, the DDS UK subsidiary is much more typical. Starting with a handful of people, it has built up gradually to its present complement of 58 staff and a turnover which, including exports, is expected to top £3 million in the current financial year. It has made a profit in every year of operation.

> **Purchasers tend to be companies with a clear idea of what they want.**

The company has now reached a stage where it is assuming an identity of its own, independent of the policies of its American parent. Assembly of the Delta terminals from imported kits has just started at the company's Welwyn premises, and in the future the company will start producing its own logic cards.

This move is justified partly by sales volumes, but partly because the company has identified European market requirements different from those of its American parent. The UK company wants to continue its emphasis on the customisation service, while the US company is moving towards a policy of higher volume deliveries of more standardised intelligent terminals.

Versatile colour printing using ink jet techniques

by Mike Keeling and Graham Martin

INK jet printing is the general name for a number of printing techniques all of which rely on the ability to form and manipulate small drops of ink which have diameters in the range 20 to 200 microns. These drops are directed or guided to appropriate points on the printing surface so that, when viewed together, they form the desired image.

Because ink jet printers are able to print, continuously, variable information at high speed, either alphanumeric or graphic, they are particularly suitable for use with computers. Applicon has recently launched a three-colour drum plotter with considerable software support. This prints a 22×34 inch sheet in seven minutes with a resolution of 125 points/inch.

On the other hand, the computer can sometimes be seen as the peripheral of the ink-jet printer when, for example, printing individually tailored information onto pre-printed forms.

It is common for ink jet printers to incorporate microprocessors which carry out the housekeeping operations necessary to keep the printer working efficiently and to manipulate data to present it in a form which the printer can use.

Apart from the ability to print variable data, there are a number of other characteristics and benefits of ink jet printers. The printing is non-contact – only the ink drops touch the printed surface, and this allows printing on delicate surfaces and moving awkward shapes.

Coloured inks, when combined with multi-jet arrays, will provide high-speed colour printing of, for example, fabrics and posters and will provide the facility for short runs and trial prints which are uneconomical when using conventional printing techniques.

Printing speed depends on the type of ink jet printer and the print quality required. For example, medium quality alphanumerics using a single ink jet can be printed at 3½ metres per second and graphics using an array of jets at 1m/sec or more.

Although, at the moment, ink jet printing cannot compete in speed with presses reproducing fixed information (e.g. in newspaper and book printing) it can be one of the fastest methods for printing variable data and this, combined with the ability to print on plain paper in colour, is the reason why many big names in computers and office products are investing heavily in ink jet development at the moment.

> **Sometimes the computer can be seen as the peripheral of the ink jet printer.**

Continuous jet. Ink jet printers of this type form a continuous stream of droplets by forcing ink under pressure through a small nozzle. Either the jet is allowed to break up naturally into drops which have varying diameters (see Hertz techniques) or a large disturbance is introduced to the system using a piezoelectric crystal so that the jet breaks up into a stream of drops which are all equally spaced and of equal size. There are a number of variations in the way these drops are used.

Sweet type printers. These are based on work carried out by Richard Sweet at Stanford University in the early 1960s. They use electric charges to vary the density of the ink reaching the printing surface.

At the point where the ink jet is forced to break up into drops is an electrode to which is applied a stepped voltage. Because the ink is conductive, the drop forming at the end of the jet will have a charge induced on it which will be retained when it breaks away from the jet.

Before the next drop breaks away the voltage on the electrode can be changed so that a different charge is retained by that drop. Hence, provided that the charging signal is kept in synchronisation with the drop formation each drop can be given a unique charge. Typical rates of drop formation are between 50 and 120 kHz.

The now charged stream of drops passes between a pair of deflector plates (field strength typically 1500 V/mm) where the drops are deflected by an amount which depends on the charge. These drops then impinge on the printing surface which is moving in a direction perpendicular to the direction of drop deflection. Uncharged drops are captured by a gutter and the ink may be reused.

Any desired image can therefore be printed by placing appropriate charges on successive drops. Printing over a strip typically 4mm wide can be achieved using one nozzle. By banking nozzles so that the least deflected drop from one nozzle is contiguous with the most deflected drop from the adjacent nozzle it is possible to print, for example, a page of graphics.

With such a fast-moving technology it is dangerous to predict limits but the maximum resolution in the foreseeable future is unlikely to exceed 16-20 points/mm. A number of printers are currently available employing this technique:

A. B. Dick (now owned by GEC) produces Video single nozzle alphanumeric jet printers. These printers have a maximum capability of 1,275 characters/second of continuously variable data and employ a resolution of 30-70 points/inch.

The intention of these printers is to provide visually acceptable rather than high quality print. There are a large number of them world-wide, and the major applications are in business forms overprinting (addressses, labels, tax details, etc), magazine addressing and product coding (beer canning lines, etc).

Domino Printing Sciences of Cambridge markets a single jet alphanumeric printer which was developed for it by Cambridge Consultants. This printer can produce continuously variable alphanumerics at more than 1,500 characters/second/with a resolution of 25-75 points/inch.

One interesting feature of this machine is that it is microprocessor controlled, which enables it to handle up to six printers from the same electronics and perform sequencing/random number printing. The market areas are similar to those of the A. B. Dick printer and lottery type applications are also being pursued.

IBM produces the 6640 ink jet document printer which is used in the System 6 word processing package. This printer produces high resolution typewriter quality output and a number of different founts are available. Its specification is very advanced and it is capable of printing at 92 characters/second (high quality) with a resolution of 10 points/mm and 184 characters/second (medium quality).

From an ink jet printing standpoint this printer is interesting in that it employs a number of print quality monitoring facilities which make it suitable for unattended operation. It is also the first major development for use in an office environment, and demonstrates that the technology has come of age.

Cambridge Consultants Limited, CCL, although not strictly a manufacturing company, has carried out research and development into this technology and is active in the implementation of this technique to wide web graphics.

Its initial work was for ICI developing an eight-colour wide width fabric printer which would enable instantaneous pattern changes to be made "on press".

Apart from the printers developed for Domino Printing Sciences, CCL also manufactured a number of multijet graphics printers, having a specification similar to that given above, for Moore Business Forms for use as business forms graphics overprinters; its current work is aimed at wide web printers with a resolution of 8 points/mm.

Other products employing this method are manufactured by Sharp (jet print single-jet standalone terminal, 510 characters per second) and REI (Trace system for electronic document sorting).

> **The use of ink jet for batch and date coding is likely to continue to increase.**

Multinozzle jet undeflected to print. In this type of printer liquid is forced through a number of nozzles and is ultrasonically broken up into droplets by vibrating the nozzle plate. At the point where the break-up occurs the jet is surrounded by a charge electrode and drops are charged in a similar manner to the Sweet type.

The main difference is that all unprinted drops are deflected on to the deflector plates, and drops required for printing are uncharged and allowed to pass straight ahead on to the printing substrate.

The only products using this method are the Dijit printers produced by Mead Digital Systems of Dayton, Ohio.

Dijit systems are currently available only in the United States and are generally available by leasing (although they can be purchased). Various resolutions and speeds are available but a typical specification is:

Resolution

Resolution	4.8 points/mm
Number of jets	960
Printing width	200mm
Speed	4.1m/sec

Printing widths of 5.12 and 10.66 inches are also available but the maximum printing speed is only achieved if the wide range of standard founts is used. For full graphics applications the speed significantly reduces.

The main areas in which this type of printer is used are business forms overprinting and credit card billing.

Hertz techniques. Professor Hertz of the Lund Institute of Technology in Sweden has developed several ink jet printing techniques. The licensing rights of these are invested in Arthur D. Little Inc, the parent company of Cambridge Consultants.

Much of the technology is based on the use of very small nozzles, typically 10 to 15 microns in diameter (compared with 30-100 microns with the Sweet technology). The ink jets are allowed to break up naturally and the drops formed are then manipulated in groups rather than individually.

In one variation the drops are charged and the repulsion between the charged drops, as they travel away from the jet, causes them to form a cone-shaped spray with a semi-angle which depends on the drop charges. A mask is placed between the jet and the printing surface with a small hole in it such that only those drops which are nearly undeflected pass through. Therefore, the density of the spray which hits the paper can be controlled by varying the charging signal and hence the cone semi-angle.

In this way an approximation to a continuously variable grey scale can be achieved with an ink jet.

Another idea from Lund, which is not restricted to use with very small nozzles, is known as the compound jet. With this a liquid jet is formed below the surface of another liquid. As the jet emerges through the surface it picks up a sheath of the second liquid (see Figure 1).

The advantage of this is that printing can be carried out with liquids which would not normally pass through the small primary jet nozzle. This offers the potential for printing with pigmented inks and other dispersions and suspensions.

This technique is still under development and there are no compound jet printers on the market yet.

Impulse jets. Impulse jets, commonly called "drop on demand", are the cheapest and slowest type of ink jet printers. Ink is supplied to the head at a very low pressure so that flow from the nozzle is resisted by the meniscus surface tension.

When a drop is required a voltage pulse is applied to the piezo crystal and the resulting deflection ejects a drop of ink on to the substrate which is in close proximity to the nozzle.

In printers of this type a number (typically seven or 12) of individual chambers are formed into a single assembly to form the height of the characters, and either the paper moves beneath the print head or more usually, the head is mounted on a carriage and traverses in a similar manner to a typewriter.

In ink jet terms, printers of this type are fairly slow compared with an equal quality continuous jet system but they do have two main advantages which makes them suitable for an office environment – they are silent, and cheap.

The formulation of ink for this type of printer is difficult, as it must meet the conflicting requirement of an ink which does not dry and hence clog the intermittently used nozzles, but at the same time must dry on the substrate. For this reason, most systems are currently used only to print on paper surfaces. The main market for these printers is as serial coders, batch coders for labels and facsimile.

There are two well established companies in this field:

The Siloneis Quietype desk-top serial character printer uses seven nozzles and can print at rates of 180 or 210 c/sec. Features provided are bolderising and individual character elongation.

Siemens of West Germany produces the PT80 serial printer which has a 12×9 matrix and can run at up to 170 c/sec. An interesting development of this machine is that it is now being offered as a facsimile printer capable of printing on A4 sheet in three minutes (CCITT Group 2).

There is also the recently launched Olympia 6021 memory typewriter, which is capable of 130 c/sec and can employ a 24-dot high matrix, although this is achieved at present by double printing using the 12-nozzle head. The machine has floppy disc storage and editing facilities.

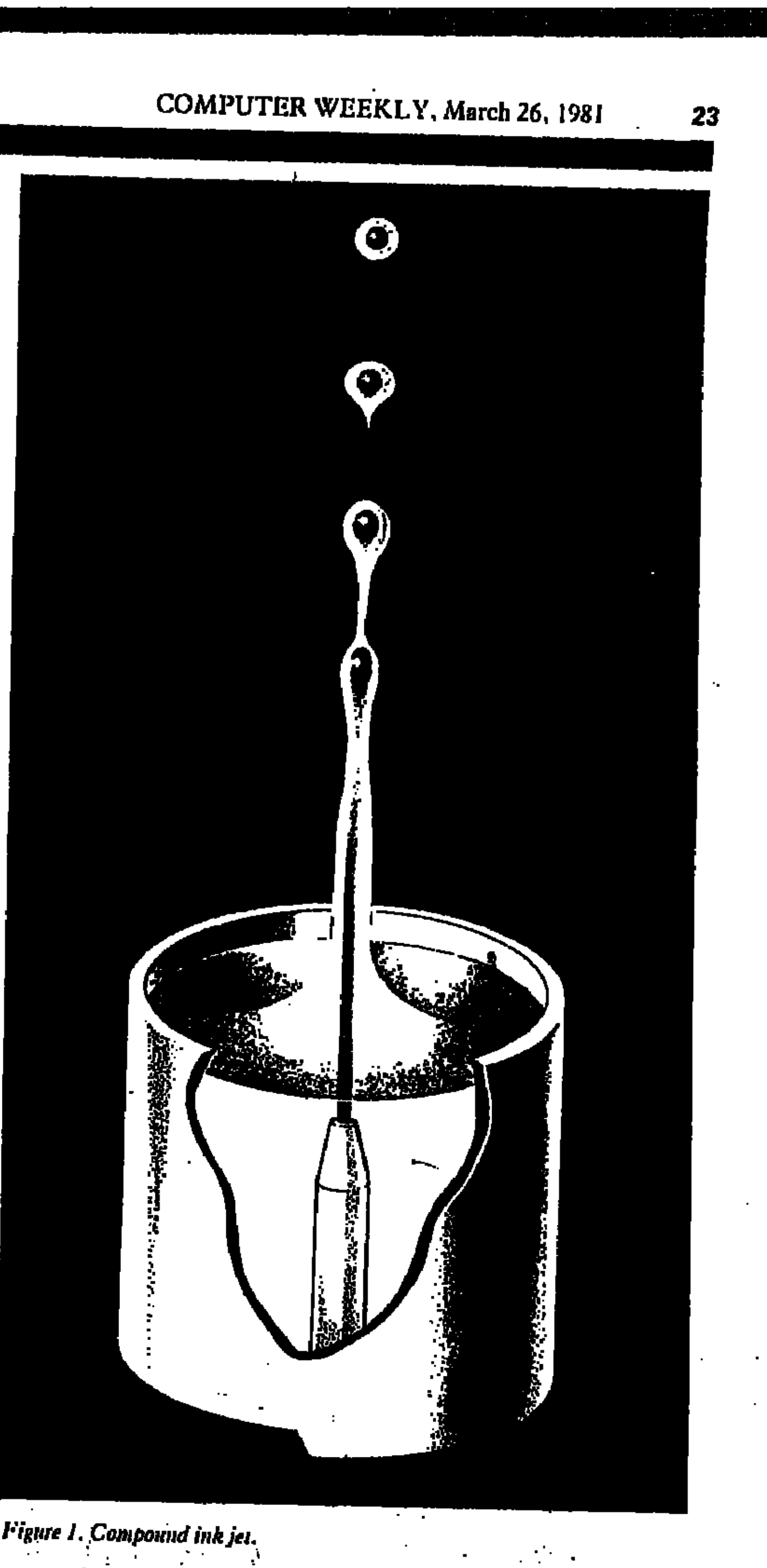
Figure 1. Compound ink jet.

The use of ink jet for batch and date coding is likely to continue to increase, and except for the very fast lines (which can be serviced by continuous jet printers) will be dominated by impulse or Hertz printers.

Business forms overprinting is an ideal application where it is possible to preprint and overprint the forms in a single pass straight from the digital data.

The high-volume, single colour office printers may well not be ink jet owing to the complexity of the technique, and laser techniques are likely to become cheaper quicker. The use of ink jet for printing of fabrics, floor coverings and wallpapers is likely to be a reality within the next five years.

Ink jet is becoming attractive in the fascimile and electronic mail fields, the main advantages here being its speed and multicolour capability.

Plotters are an area wherd ink jet is ideal. The Applicon plotter is a typical example.

Single-supplier market is a relic of the (recent) past

by Alan Simpson

THAT LONG-HELD convention that your mainframe is only as good as your peripherals has taken something of a setback in recent times.

In fact, the DP pendulum has now swung into reverse with the result that it is now feasible to suggest that peripherals are only as good as the mainframe they support.

No longer is it standard practice for the installation to operate a one-stop shopping policy where the user traditionally orders mainframe and matching peripherals from a single supplier.

The arrival on the peripheral scene of highly aggressive and highly competent plug-compatible manufacturers has added to the equipment selection responsibilities of DP management, who now have to spend as much time on evaluating alternative offerings as on those of the mainframe supplier.

Even so, the basic mainframe selection remains the most important decision. Unless the chosen CPU can support the competitive products of the independents, the installation will be locked into the one-source supplier – the mainframe manufacturer.

> PCM development has centred directly on the IBM marketplace.

The PCM industry is by no means limited to the heavyweight end of computing as the alternative marketplace at the micro end is becoming increasingly competitive.

Independents are offering matched printers, screens and even add-on memories. Computing life, at least for the purchaser, is not getting any easier but it should be getting cheaper.

It is uncertain where the independent movement is taking the industry. PCM companies have proved their aggressive determination to lay siege to their chosen marketplace slot and can be expected to conquer new technological pastures.

It has become clear that the independents will not be content to rest on their peripheral laurels and at least one major company has announced the intention of developing and marketing its own range of IBM-compatible mainframes.

It will be interesting to see how soon the company has to face competition from other independent peripheral suppliers.

Before the current PCM marketplace is discussed, a review of the history and development of the independents will be useful.

Such a review will, however, be relatively brief as the companies involved have reached their present eminence in a remarkably short space of time. PCM development has centred directly on the IBM marketplace.

Groups of talented IBM engineers saw possibilities in specific product areas and set up independent companies to exploit the opportunities.

By concentrating on selected activities such as magnetic tape storage or line printers, high technology products capable of offering a cost effective alternative to IBM products were developed.

In the heady days of the late '60s and early '70s, venture capital was not hard to find as is the case now in respect to funding Apple, Acorn or Pet enterprises.

Possibly to the eternal chagrin of IBM, the company chose to ignore the small scale operators, even though they were demonstrating their ability to produce cost effective alternative products.

In the invigorating climate of the Western US, the small companies flourished and soon found themselves competing effectively not only with IBM but with each other.

There was certainly no magic technological formula which assisted the small independents. Any magic involved was their ability to develop, often in that proverbial Californian garage, a product equal to those produced in a lavishly-equipped mainframe laboratory.

The PCM movement was founded on the computer revolution – the revolutions being those of mag tape drive, line printer barrels and at a later stage, magnetic discs.

Behind the development was the recognised need for better, more efficient and possibly cheaper methods of storing data. The ability to hold and manipulate considerable amounts of data was the one factor which took the computer out of the academic world into that of business and commerce.

Data storage technology occurred with the demise of the punch card and paper tape and the accession of magnetic tape systems. Even now, mag tape remains the most cost effective storage medium, density packing having increased from a modest 200 bits per inch to 6,250 bpi.

By concentrating on data storage devices; the independents managed to capture the major share of the mag tape system market.

Before long, the PCMs turned their technological resources towards the next level of data storage, that of magnetic disc. Mag tape suffered from the disadvantage of having to be accessed sequentially.

Data must be loaded in batches and the whole exercise is fairly time-consuming. With the demand for real time processing sounding loud and clear, mag disc was the obvious answer, presenting the user with the ability to access directly any required data record in double density quick time.

Introduced in 1956, disc technology has shown an incredible advance, especially following the introduction of the IBM multiprogramming operating system.

Demand surged for higher density, higher access speeds and increased capacity disc systems. These requirments are supplied by the PCMs, who added the bonus of keen pricing.

Unfortunately, the PCM alternative marketplace is limited although the limitation factor does not embrace IBM users and it is possible to buy alternative CPUs.

Amdahl and Magnuson offer a highly competitive line in mainframes while alternative software is provided by such IBM-compatible companies as Computer Associates and TSI.

> It must be increasingly difficult for manufacturers to compete effectively across the computer product board.

The limitation extends only to the fortunate IBM user. This factor of computer industry life is not due to lack of independent interest or size of market. It is more the result of intransigence on the part of many of the non-IBM mainframe manufacturers who appear to actively discourage the activities of PCM competition.

To many industry observers, this hesitant attitude is not only mistaken, but provides a strong disincentive for potential purchasers involved in choosing their computer systems.

The fact that IBM users have the option of buying independent must not only benefit the user, but keep IBM as a supplier very much on its toes.

In any case, it must be becoming increasingly difficult for mainframe manufacturers to compete effectively across the computer product board, especially in the face of such rapid technological innovation as RAM and ROM memory devices.

That the laggards in the mainframe industry are finding it hard going to keep technological pace is becoming apparent as more and more companies are letting in the PCM industry through their back door.

The back doors in question are called OEM but the products are marketed in company colours to avoid confusing the possible user.

But for users without colour prejudice, not being able to choose and select their own peripheral equipment must seem a relic of the past.

Not all users, however, are keen or willing to venture into the PCM marketplace. Many are only too pleased to stay with IBM and run an all-blue operation, as the independents put it.

In particular, the thought of having to cope with hordes of rival engineering teams descending on the installation is rather daunting.

Problems of demarcation and storage facilities for spares coupled with long-held reservations on product and service reliability and dependability often take precedence over such factors as cost savings and improved performance.

This hesitation is understandable in certain cases as the installation management has the responsibility of producing the required goods within tight time schedules. Any factor – imaginary or otherwise – which could impede that objective and bring out the wrath of senior company management is a matter to be avoided studiously.

A further suspected area of wrath is that of the mainframe supplier, who can hardly be expected to view with total equanimity the prospect of the installation being filled with rival boxes and equipment.

But times are certainly changing and the news last month that a major high street bank – an institution not noted for risk taking or pioneering new computer techniquies and technologies – has thrown banking caution to the wind and ordered PCM equipment, could be the ultimate acceptance accolade for the PCM operators.

The independents have been working for some time to achieve industrial credibility – despite the undoubted advantages of considerable cost savings, substantially shorter delivery dates and advanced level technology.

> The thought of having to cope with hordes of rival engineers is rather daunting.

The PCM target is the DPM, who still seeks a quiet and traditional installation life in order to concentrate on such intractable matters as software application amendments and personnel training.

The thought of having to adjudicate between mainframe and peripheral engineers or sales teams seems likely to intrude on these activities although in practice, of course, such fears are groundless.

Most PCM engineers, having graduated with IBM, are probably as skilled in mainframe diagnosis as in peripherals and share the concern of their mainframe colleagues able to get the show back on the road in as short a time as possible.

The reputations of the independent suppliers stand or collapse on the levels of sales and engineering support as well as the performance of their products.

In these cost and budget strained times, few installations can afford to ignore the presence of the PCMs.

The independents claim to have reduced the cost of processing by a factor of ten in the past decade and it can be assumed that similar rates of progress will be attained during the next ten years.

Whether this means that the installation can expect to be up to is ears in bubble memory technology remains to be seen.

There is no doubt that the part computers play in business and government owes much to the declining costs of peripherals.

Crawley Sports Centre steps into the breach to solve Southern area heat 'overflow' problem, and in Holland . . .

Hengelo wins battle to stage Euro finals of the DP Olympics

High and dry, low and waterlogged respectively for these competitors in Computastars' gruelling steeplechase event.

A GLITTERING prize awaits the most successful domestic teams from the 1981 Computastars and Computatug competitions, an incentive provided by the announcement of venue for this year's grand European final.

"We have decided to stage the final at Hengelo in Holland on September 5", competition organiser Gordon Cairns told Computer Weekly earlier this week.

"The running events will take place on Hengelo's tartan track and there is plenty of covered accommodation for spectators", he added.

"This is in contrast to the principal Dutch athletics meeting of the current season which will be staged at a venue without covered accommodation and it highlights the growing international importance of Computastars.

"There will be hot food, good changing facilities and we are negotiating for bar facilities to help keep spectators in good heart throughout what will prove an absorbing day's competition.

"The only major problem is to decide whether our competition will be housed in Amsterdam, some 90 miles away from Hengelo, or closer to the competitive centre.

"We are seeking the views of UK teams and will be in a position to announce our final decision within a matter of weeks at most.

"Henglo won against strong competition from the Dutch Olympic Stadium, Nijmegen and Pappendao – the latter often used to stage paraplegic games competitions.

"Hengelo gained our vote because of its superior facilities and the fact that the Olympic Stadium is due to stage two major soccer events – one involving the Dutch World Cup qualifying group match and the other a League champions' competition shortly before and after our European final."

All of this lies some months ahead. More pertinently, Cairns is concerned to ensure the success of the UK heats and final which will provide our entrants to the Hengelo climax.

As Cairns explained in a previous issue, over 120 UK teams are ready to compete in Computastars and a dozen tug-of-war sides ready to pull out their collective arms in the fledgling Computatug event.

"We have solved the problem of our 'overflow' Southern entry for Computastars by securing a definite booking for the Crawley Sports Centre on May 25", he explained.

"This means that our full list of heats now reads: Midlands in Birmingham on April 25; Southern events at Barnet on May 16 and Crawley respectively; and the Northern equivalent at Cleckheaton on May 31.

"Add to this list our definite commitment to the UK final at the New Alexandra Stadium in Birmingham on July 26 and this gives an indication of our tight schedule which opens next month.

"While all these events are in progress, our Dutch colleagues will be staging their own three heats and national final shadowing our progress towards Hengelo.

"It is also worth noting that successful teams from last year's heats will be acting as judges during this year's regional competitions.

"This means that Data Logic (men) and Rowntree Mackintosh (ladies) will provide the judges at Cleckheaton, with Mettoy (men) and Midland Household Stores (ladies) providing a similar service at Birmingham on April 25."

COMPUTASTARS

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Venues and teams

BIRMINGHAM

Group I: BL Systems Ltd. (Redditch), Safe Computing Ltd. (Leicester), Superstars (Kalamazoo Ltd.) (Birmingham), Vikings (Sandvik Ltd.) (Birmingham), Systems Resources Ltd. (Coventry).

Group II: Midland Household Stores Ltd. (Nottingham), Sketchley Skylarks (Sketchley Ltd.) (Hinckley), Compact 3000 Systems Ltd. (Sedgley), Metal Box Ltd. (Worcester), Jolly Giants (LBM UK Ltd.) (Nottingham).

Group III: Scicon Computer Services Ltd. (Milton Keynes), Management Computer Systems Ltd. (Manchester), Colworth Crushers (Unilever Ltd.) (Sharnbrook), Open University (Milton Keynes), Rank Outsiders (Rank Xerox Ltd.) (Watford), Mission Impossible (Cheltenham Computer Bureau Ltd.) (Cheltenham).

Group IV Ladies: Thorn EMI Ltd. (Telford), Metal Box Ltd. (Worcester), BL Systems Ltd. (Redditch), Safe Computing Ltd. (Leicester), Kalamazoo Ltd. (Birmingham), Scicon Computer Services Ltd. (Milton Keynes).

BARNET

Group I: Thorn EMI (Hayes), P & O Computer Services Ltd. (Watford), London United Computing Systems Ltd. (London EC2), Elstree Computing Ltd. (Borehamwood), Martin The Newsagents Ltd. (Brentwood). Group II: Gordon & Gotch Computer Group Ltd. (Staines), BOC Datasolve Ltd. (Sunbury-on-Thames), Microscope Ltd. (Maidenhead), Linscott Business Systems Ltd. (Brentwood), Data 100 Systems Ltd. (Harpenden).

Group III: Provident Mutual Life Assurance Assoc. (Hitchin), Armstrong Excuse (Armstrong World Wide Industries Ltd.) (Uxbridge), The Wizards (Arthur Andersen) (London WC2), Centrefile Ltd. (London E1), Logica Ltd. (London W1).

Group IV: Computer Machinery Co. (Hemel Hempstead), Rank Xerox Ltd. (Watford), Express Surprise (Tymshare UK (Tymcom Ltd.)) (London WC2), Digital Equipment Co. Ltd. (Welwyn).

Group V: Chelsea College (London SW6), The Banana Bunch (Cambridge Computer Services Ltd.) Cambridge), Superblues (Securicor Ltd.) (London SW6), The Kingsizers (Wimpey Group Services Ltd.) (London W6), Hogg Robinson Services Ltd. (Leicester).

Group VI Ladies: London United Computing Systems Ltd. (London EC2), P & O Computer Services Ltd. (Watford), Linscott Business Systems Ltd. (Brentwood), Logica Ltd. (London W1).

Group VII Ladies: Rank Xerox Ltd. (Watford), Digital Equipment Co. Ltd. (Reading), Cambridge Computer Services Ltd. (Cambridge), The Wimpets (Wimpey Group Services Ltd.) (London W6).

CRAWLEY

Group I: Legal & General Assurance Society Ltd. 1 (Kingswood), The Shylocks (Citibank) (Lewisham), Datema Ltd. (Bristol), Gonzales Byass (London WC1), Generale De Service Informatique (UK) Ltd. (London EC1).

Group II: Bank of England 1 (London), American International Underwriters (Croydon), Legal & General Assurance Society Ltd. 2 (Kingswood), Hallmark Associates Ltd. (Woking), Royal Borough of Kensington & Chelsea (London W8).

Group III: Bank of England 2 (London), B. H. Blackwell Ltd. 1 (Oxford), SEGAS (Croydon), Reed Group Data Processing Ltd. (Maidstone), British Aerospace Ltd. (Kingston upon Thames).

Group IV: B. H. Blackwell Ltd. 2 (Oxford), Barclays Bank International Ltd. (Poole), Norman Frizzell M&G Ltd. (Westbourne), London Borough of Lambeth (London SE14).

Group V Ladies: Legal & General Assurance Society Ltd. (Kingswood), Barclays Bank International Ltd. (Poole), London Transport Executive (London W1), Generale De Service Informatique (UK) Ltd. (London EC1).

Group VI Ladies: SEGAS (Croydon), B. H. Blackwell Ltd. (Oxford), Royal Borough of Kensington & Chelsea (London W8).

CLECKHEATON

Group I: Empire Stores Ltd. (Bradford), Provincial Building Society (Bradford), Rosemary's Babies (British Olivetti Ltd.) (Leeds), Provident Management Services Ltd. (Halifax), The Wombats (Spear & Jackson (INT) Ltd.) (Sheffield).

Group II: Bradford & Bingley Building Society (Bingley), Kirklees MBC (Huddersfield), Qathletes (QRH Computer Group Ltd.) (Brighouse), Grattan Warehouses Ltd. (Bradford), Computer Machinery Company (St. Albans).

Group III: United Biscuits Ltd. (Liverpool), Racal Milgo Ltd. (Manchester), On Track North (Data 100 Systems Ltd.) (Harpenden), Heywood & Partners Ltd. (Liverpool), Barclays Bank Ltd. (Knutsford).

Group IV: Reckitt & Colman Ltd. (Hull), Initial Services Ltd. (Manchester), NCC All Stars (National Computing Centre) (Manchester), Ticron Computer Services Ltd. (Stockport), KBS Computer Services Ltd. (Liverpool).

Group V: Rowntree Mackintosh Ltd. (York), Compower Ltd. (Doncaster), Edinburgh Regional Computing Centre (Edinburgh), Computer Data Services (Northern) Ltd. (Sheffield), Littlewoods Athletic (The Littlewoods Organisation) (Liverpool), Liverpool Computer Services (Liverpool).

Group VI Ladies: Bradford & Bingley Building Society (Bingley), Reckitt & Colman Ltd. (Hull), National Computing Centre (Manchester), The Littlewoods Organisation (Liverpool).

Group VII Ladies: Empire Stores Ltd. (Bradford), Heywood & Partners Ltd. (Liverpool), United Biscuits Ltd. (Liverpool), Provident Management Services Ltd. (Halifax), Initial Services Ltd. (Manchester).

COMPUTATUG

Barnet: Kathy's Boys (BP) (Harlow), Microscope Ltd. (Maidenhead).

Crawley: Worthing Rams (Inland Revenue) (Worthing), Barclays Bank International Ltd. (Poole).

Birmingham: BL Systems Ltd. (Redditch), Superstars (Kalamazoo Ltd.) (Birmingham).

Ladies: BL Systems Ltd. (Redditch), Gloucestershire County Council (Gloucester).

Cleckheaton: Initial Services Ltd. (Manchester), PMSL Pullers (Provident Management Services Ltd.) (Halifax).

Hard-won points

AS Computastars has developed into a sophisticated international eight-event competition, so its scoring system has progressed from the early days of simple team v team marking.

Gordon Cairns has introduced the modified decathlon scoring method, adapted for eight events, which will be used throughout both the UK and Dutch heats and finals this year.

"We are employing a simplified system which will be based on a scale varying from one to 15 points", he explained.

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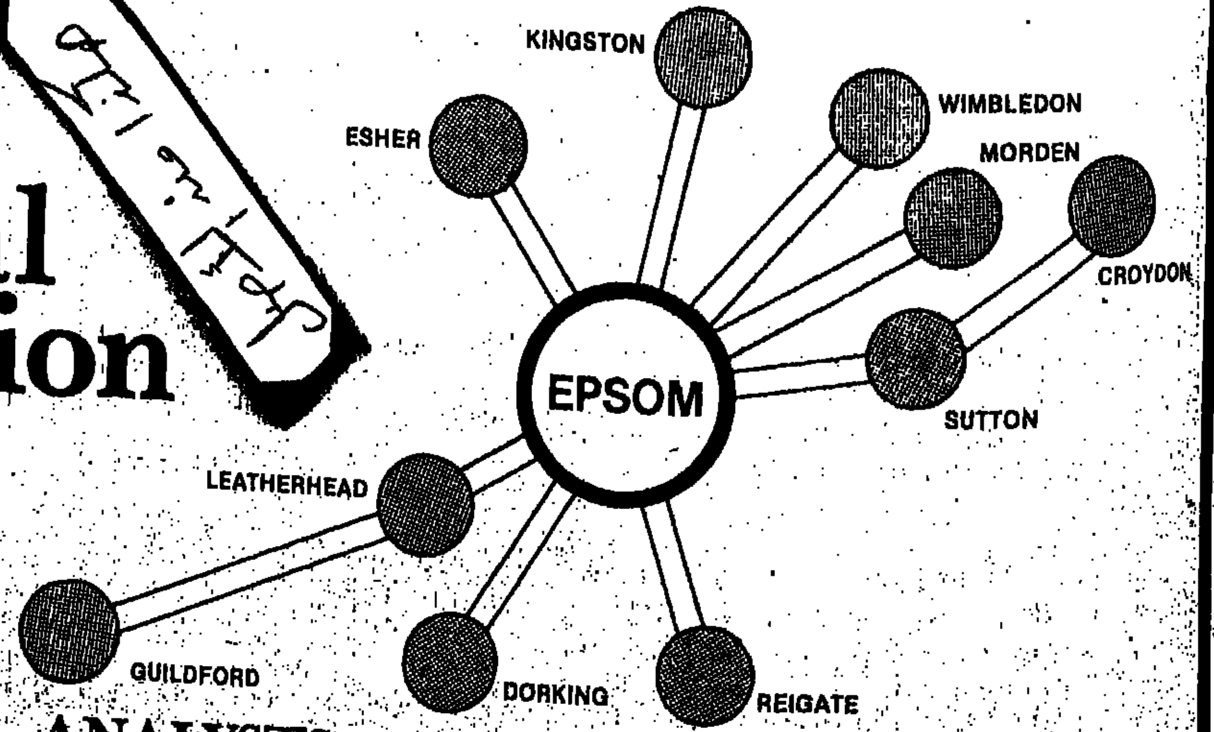

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CAREER PROGRESSION FOR A

SENIOR ANALYST PROGRAMMER/TECHNICAL SUPPORT PROGRAMMER/TIMESHARING SPECIALIST

LONDON, W.6 IBM 303X UNIVAC 1100 MINIS TO £11,500

Our client's highly successful international business operation in the field of engineering and construction is supported by an efficient and professional computing and data processing services department. Due to the increased demand for these services the Information Services Department now wishes to appoint an additional person to provide internal consultancy and technical liaison.

The Data Processing Support Group is responsible for a wide range of computing services, including timesharing application support, technical support, consultancy, user education, the evaluation of new software and the design and implementation of special systems. Current projects include real-time database development and minicomputer systems. This post therefore offers the opportunity to extend one's computing experience in the broader range of data processing.

Applicants will offer in excess of five years' data processing experience and may currently be engaged in one of the activities desribed above. A knowledge of high-level languages – such as COBOL or FORTRAN and experience with some of the relevant hardware is important although candidates who can demonstrate sound experience of other software and hardware and invited to apply.

The company offers an excellent package of benefits together with the opportunity for travel to overseas locations.

To discuss this challenging career opportunity contact Myriad Appointments.

Ref: N1/1903

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA Telephone 01 353 0981 24 hours

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HONEYWELL. To work on DPS 8/20 DM4 ANALYST/PROGS	12 Mths	MARK IV PROGRAMMERS	Indef.
IMS DB & DC SYSTEM DESIGNERS	6/12 Mths	UNIVAC 1100-COBOL, DMS1100, TIP	4 Mths
INSURANCE & BANKING ANALYSTS	3-9 Mths	NEAT 3 PROGS.	4 Mths
HP3000-COBOL, IMAGE, QUERY, VIEW	6-12 Mths	SYS 34, 38 RPGII, RPGIII PROGS	3 Mths +
IMS DB/DC Troubleshooters	Indef.	MACRO 11 & PRIME SYSTEMS PROGS.	3/6 Mths
		VME/B, FORTRAN PROGS.	Indef.

To discuss these and many other contract opportunities, please call any weekday up to 8 p.m.

(4939)

HEXAGON computer services
Hexagon House, [illegible] Wardour Street, London W1V [illegible]
☎ 01-439-3671

EDP Auditors

Our Corporate Audit Department, which performs EDP and financial audits world wide, has an ongoing requirement to replace auditors being transferred to management positions after approximately 3 years in the department. Our immediate requirement is for:

TRAVELLING EDP AUDITORS to perform audits in overseas affiliates, all expenses paid for self and spouse, plus an overseas allowance, returning to the UK only for annual leave.

LONDON BASED EDP AUDITOR concerned mainly with UK and some European affiliate audits. On European audits usually returns to UK at weekends.

The work involves the audit of Systems and Data Processing installations, appraisal of internal controls and operating procedures of computer systems, and discussion of findings and recommendations with senior management culminating in submission of reports.

Candidates should be aged 25-35 with at least 6 years experience with large scale IBM computer equipment, and mini computers, and in systems analysis, programming, project management and computer operations. Professional accounting qualification not essential but some experience or training in accounting necessary. Ability to communicate effectively at all management levels is essential. Knowledge of French or German an advantage.

Please write with details of qualifications, experience, age and current salary to **Overseas Recruitment Department, Mobil Services Company Limited, Mobil House, 54-60 Victoria Street, London SW1E 6QB quoting reference CW/CPT/3.**

Mobil

- U.S.A. -

WHO: Computer Task Group Inc. (CTG), one of the largest professional software services companies with over 900 employees located throughout the U.S.

WHAT: "Bright" Computer Professionals with 2+ years' experience as programmers, analysts or designers. Non-IBM background will be considered.

WHERE: **LONDON INTERVIEWS: April 6-8** (expenses reimbursed)

WHERE: **Royal Lancaster Hotel**
Lancaster Terrace
London, W2 2TY –
01-262 6737

Spend 12-18 months on our professional staff with full company paid benefits. Relocation including return airfare paid. For further information or to schedule or phone our U.K. representative (reverse charges accepted) L. Levine, beginning April 1.

NOTE: THERE MAY BE OPPORTUNITIES TO REMAIN WITH CTG IN THE U.K. UPON YOUR RETURN.

SERVICE MANAGER

Versatec, part of the Xerox Group, is a Californian company supplying high technology electrostatic computer peripherals for scientific and commercial applications.

Don, our present Service Manager has won a deserved promotion to California, so we want to hear from his replacement. Applicants (male or female) should have proven experience in the computer industry as a Service or Deputy Service Manager, a good technical background and a strong character.

The salary is above average, a company car is provided, and BUPA membership is amongst the benefits offered. Assistance with relocation will be provided if necessary.

Contact Bill Boffin for further details.

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A XEROX COMPANY

Versatec, 27/35 London Road, Newbury, Berkshire, RG13 1JL. Telephone: Newbury (0635) 42421

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Our client will be interested in talking with you if you have a successful selling record and a working knowledge of one or more of the following:

Commercial Applications
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CCAB

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SALES ENGINEERS

Simulation and computer graphics systems

Sales engineers are needed now to meet the growing demand for one of the most exciting product ranges in Europe. R & H specialises in simulation systems and computer graphics; manufactures Applied Dynamics computers in the USA; has Europe-wide franchises for Vector General, Genisco, Comdyna, Datawest, IGS and other big names.

The UK company is based at Worthing but sales engineers are required throughout the U.K. To apply, you must have experience of either simulation; CAD; or graphics. Salary and benefits are highly competitive. The opportunities for future growth excellent.

Send detailed C.V. to van Rietschoten & Houwens (UK) Limited, Crescent House, Crescent Road, Worthing, West Sussex BN11 1RS. Tel: Worthing (0903) 206096.

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If you are interested in working on new real time projects on up-to-date equipment and have at least one year's programming experience, contact Mike Shore or Graham Thorpe on Littlewick Green 2166 or write for an application form to Mrs. Pam Polak at Southern Electricity House, Littlewick Green, Maidenhead Berks., SL6 3QB, quoting 6/81, by not later than the 17th of April, 1981.

JBA

S/W Specialist – Real Time Systems

Cleveland **to £10,000**

An organisation specializing in purpose built control systems has a first class SENIOR opportunity involving:–

- *** R/T Software Design for T.I. Micros.**
- *** High reliability technical applications.**
- *** Major project responsibility.**
- *** A challenging professional environment.**

Applicants should have a qualification in a numerate discipline and with at least 3 years experience of developing technical or basic software using ASSEMBLER level languages. Previous experience of T.I. minis or micros and higher level languages would be advantageous but is not essential.

"Excellent promotion prospects in an expanding company." **Contact: Bev Stevens**

Senior Analyst/Systems Analyst

Bristol **to £9,000 + low interest mortgage**

A well respected company maintaining a prominent position in the field of finance now wish to appoint a further SENIOR ANALYST and a SYSTEMS ANALYST to assist in the development of major computer systems.

Applicants should have several years systems experience and for the SENIOR ANALYST position have been involved in the entire development of at least one significant project. Ideally they will have experience of data analysis plus structured systems techniques and a knowledge of data base and data communications would be also useful. Previous supervisory experience would be an advantage for the SENIOR role. Impressive and congenial working conditions plus excellent range of benefits.

Contact: Mike Gaitskell

Senior Programmer/Systems Analyst

Birmingham **Salary + Bonus**

SERCK HEAT TRANSFER, leaders in heat exchange technology have recently undertaken a major expansion including the installation of an ICL 2905 operating under DME/2. They are now looking for additional staff to work on their On-Line Development Plan. The Senior Programmer should have at least 3 years COBOL with some Filetab. MTS would be a definite advantage.

The Systems Analyst should have a minimum of 2 years experience including implementation of at least 1 major project. OMAC and MMS experience is an added advantage.

The positions offer excellent salaries and attractive fringe benefits including a monthly bonus. **Contact: Christine Pountney**

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
Gateway House, 50 High Street,
Birmingham B4 7SY.
Tel: 021-643 7865.

PROGRAMMER

AMICUS SYSTEMS LIMITED is a young and growing company designing and producing microcomputer systems for an expanding area of technical applications.

Our software team needs the assistance of an experienced PROGRAMMER who has plenty of initiative and is at home with both high and low-level languages.

Could you take responsibility for complete projects, from software design to live running? Would you enjoy the chance to work close to the hardware as well as on high-level application development? Do you welcome the opportunity to grow with the company and have your ideas encouraged? For the right person, the salary would go into 5 FIGURES.

If so, Contact us at:
175-179 St. John Street, London E.C.1.
Telephone 01-837 1865

(4961)

AMICUS SYSTEMS LIMITED

LIVERPOOL POLYTECHNIC
COMPUTER SERVICES DEPARTMENT

PROGRAMMER

£5,952-£6,750 per annum

A new computer system is being installed during the summer to provide interactive facilities for all Polytechnic departments. The new computer system, supporting 64 simultaneous users, will be operating in parallel with the existing 1903A batch system.

The Polytechnic's Computer Services Department was created little over 18 months ago and staffing levels within the department on the programming side are minimal. The successful application will be expected to play a major role in the installation of the system and the establishment of an effective computing service for the Polytechnic.

THIS VACANCY OFFERS A UNIQUE OPPORTUNITY TO BE INVOLVED AT THE START OF A MAJOR DEVELOPMENT PROGRAMME.

PLEASE QUOTE REFERENCE LP/[illegible]

Applications are invited from candidates who have, or expect to obtain, a degree in Computer Science. For further particulars and application form, contact the Personnel Office, Liverpool Polytechnic, Rodney House, 70 Mount Pleasant, Liverpool L3 5UX. Tel: 051-709 3636 Ext. 43. Informal details may be obtained from members of the Computer Services Department by ringing 051-207 3581 Ext. 129

VIDECOM

An independant, entirely British company that has established a worldwide reputation for technical innovation and high reliability of its products is currently seeking field service engineers, preferably with experience on Terminal Cluster Systems, in the following locations:

BIRMINGHAM, BRISTOL
DARLINGTON, GLASGOW
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Salary negotiable + Car + Training

Contact Peter Sopp on Reading 669141 for details and application form.

(4963)

SERVICE PROGRESS

LONDON – HOME COUNTIES

FIELD SYSTEMS ENGINEERS £[illegible] + O/T + CAR

Growth of 100% per annum demonstrated the forward looking attitude of this major U.S. mini manufacturer. This growth has led to important vacancies within the service organisation. Product training in both U.S. and Europe and early promotion will boost your career if you can demonstrate computer experience and mature attitude to work.

SERVICE ENGINEERS £[illegible] + CAR + O/T + S/S + BUPA

Our client, major U.S. mini manufacturer with over 20,000 installations worldwide, is offering exciting career opportunities in London/Home Counties to ambitious service engineers. Comprehensive product training on an extensive range of high performance systems will be offered to suitable young engineers seeking an opportunity to join one of the world's most respected manufacturers.

Call Keith Wallis on any of the above and many others in

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01-543 4844

(6000)

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BANKING/TECHNICAL CONSULTANTS
London based. £12-£18,000 + good benefits

This subsidiary of a large group provides a specialist international banking service for clients in the U.K., Europe and USA. The company is one of the largest, longest established independent computer services organisations in Europe.
They now wish to recruit several consultants in the banking and technical field. Applicants should possess at least 5-6 years' practical DP experience with the ability to program in at least one commercial programming language. They must be willing to travel and work in the U.K. and overseas. In addition, as the job titles imply, they must have relevant banking and technical experience.
The company provides a first-class benefits package in addition to a substantial basic salary.
For more information, contact Tony Staples.

CONSULTANTS. Middlesex
£8-£17,000 + good benefits

Rise to the challenge of meeting strict deadlines and of participating in the sales effort of this leading European software house by offering a minimum of three years' commercial (accounting applications preferable) experience and an in-depth knowledge of a high-level language. You will be interested in extending your general computing expertise and ability to solve business problems for a wide client base. Contact Anne Powell.

INTERNATIONAL SYSTEMS ANALYST
Middlesex. Up to £10,500

Based in the UK, you will travel to Europe to advise on and implement new systems.
Effective communications skills, at least 2 years' DP experience, comprising 12 months' COBOL programming with 12 months' analysis and preferably a knowledge of NCR equipment, will fit you for this challenging position. Contact Anne Powell.

ANALYST/PROGRAMMER
Herts. £ negotiable

A small, friendly software house specialising in packages for commercial applications, requires several Analyst/Programmers to work on the development and maintenance of new and existing systems.
Applicants should have experience of RPGII using IBM GSD equipment, especially System 34.
If you are self-motivated and fed up with being just a cog in a wheel, telephone Tony Staples who can provide further information.

PROGRAMMERS
Middlesex, N.W. London. Up to £9,000

We have varied requirements for programmers, predominantly IBM, UNIVAC & ICL COBOL in the above area and surrounds. Many of the positions have added interest by way of systems design or analysis involvement and relevant experience, in addition to programming, is most welcome.
Why not call Anne Powell to discuss in more detail.

ANALYST/PROGRAMMERS
S.E. London. £10,000 + benefits
(Half-year reviews)

A well-known service bureau has established specialised data processing services to charities, professional firms, mail users and other industrial and commercial clients since 1964. The rapid development of these services has involved the growth of a modern DP installation based on powerful mainframe, mini and micro computers. Analyst/Programmers are required in the DEC and IBM groups, to contribute to the ongoing expansion. Applicants should have 2 years' minimum experience of BASIC + for PDP 11 in commercial applications or two years' IBM COBOL (Assembler and/or MK IV knowledge would be useful).
Contact Tony Staples.

ANALYST/PROGRAMMER
Berkshire. Up to £8,500

There is an unusual career opportunity with our client, a centrally located prestige organisation having the latest IBM configuration and planning a major upgrade next year.
A well qualified, determined person able to communicate well and work to high standards is required for the European support centre to assist in the development/implementation of order processing systems and future enhancements, in addition to SW house liaison and European systems support.
Essential experience is 2 years' minimum COBOL and systems responsibility in a small 370 DOS environment; 4300 on-line systems design experience is a definite advantage.
Contact Steve Fenton.

(4928)

Please complete this coupon and return (no stamp needed) to OCC, 16 Bedford Row, FREEPOST, London WC1R 4BR.

Name ____________________

Address ____________________

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Phone No's: home __________ **work** __________

Please provide brief details of experience of vacancy required (quote any of the above if applicable).

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Communications Software

Southern Germany: Salary to £15K

Communications Engineers from Programmer/Analyst to Team Leader level are urgently required by one of Europe's leading suppliers of communications equipment. Software development teams, based in their R&D Headquarters, are currently engaged in the design and construction of an advanced telephony system based on Intel 8086 microprocessors. All applicants must possess at least two years' real-time software development experience on any leading mini or micro-computer and be fluent in one high-level problem orientated language such as PASCAL, CORAL or RTL/2. For the more senior positions it is also necessary to be familiar with an Assembler language and be capable of supervising a small team of Programmers and Analysts. Initial interviews will be held in London and those who are successful will be invited to the Company's premises prior to offers of employment being made. Ref: L/13/A

Technical Consultants

Central London: Salaries to £15K

Outstanding opportunities have arisen for candidates to join a long established and successful computer consultancy based in Central London.. You should be aged 28-34 years and educated to at least degree level. It is essential that all applicants possess good personal communication skills and demonstrate the ability to solve problems both quickly and professionally. Of particular interest will be candidates who have experience in Telecommunications, Distributed Processing or Data Base Management. Working as a member of a small team, you will not only be involved in the implementation of systems, but also in corporate strategy study, operational research and marketing. Ref: L/13/B

Commercial Programmers

Berks/Surrey: Salary to £8K

Commercial Applications Programmers with at least 2 years' experience are urgently sought by a small, profitable Systems and Software House. It is essential that all applicants are familiar with at least one high-level language, preferably Fortran, but those fluent in Cobol or other commercially orientated languages are encouraged to apply. Our clients have a stated preference for candidates who have worked on DEC's PDP11 range but particular hardware experience is not a limiting factor. These positions represent a rare opportunity for successful applicants to enhance their technical skills whilst working in an attractive rural setting. Ref: L/13/C

Graphics Consultants

Thames Valley: Salary to £16K

A leading supplier of CAD/CAM Graphics Systems is seeking several Senior Applications Consultants. The Company is based in a most attractive area within minutes drive of extensive rail and motorway facilities. Successful candidates must offer recent involvement in one or more of the following areas: pre-sales feasibility studies, post sales graphics support, advice to users on CAD problems, first-time installation of systems with training of designers and draughtsmen, specialised industrial knowledge of RC Machining. In addition to an above average salary the Company offers an extensive range of worthwhile benefits including a profit share scheme. Where necessary, relocation assistance will be given. Ref: L/13/D

Cobol Programmers

H. Counties/Holland: Salaries to £13K + car

A leading Systems and Software House, which has expanded rapidly over the last 5 years, currently requires COBOL Programmers for both its U.K. and Dutch offices. Applicants should be graduates with a minimum of 3 years' programming experience on any mainframe, mini or micro computer. Working as a member of a small team you will be involved in the development of bespoke software for various clients including most major computer manufacturers. The company offers outstanding benefits including 14 months salary per annum, a company car, an annual bonus and an equity stake. Ref: L/13/E

Software Designers

Teesside: Salary to £8.5K

A well-known Electronics Company with recent diversification into process control and medical computing is seeking several Software Designers and Programmers. The company's system is micro based and operates in a distributed processing environment. Particular programming experience must include one or more of: CORAL 66, PASCAL, RTL2 or Assembler. Systems software experience should include both device handlers and communication processors. You will play a large part in the specification, systems design, implementation, test and documentation stages. Relocation assistance is available where necessary. Ref: L/13/F

Syst. & Prog. Consultants

London & Home Counties: Salaries to £17K

One of Europe's leading independent software houses has a number of vacancies, at all levels, for Systems and Programming Consultants. Applicants must have a minimum of 3 years' commercial experience and be fluent in at least one high-level language, preferably Cobol, whilst knowledge of an Assembler language is an advantage. Particular hardware experience is not important, the primary requirement being a strong interest in systems development and business problem solutions. Unrivalled opportunities for promotion exist and therefore these vacancies will appeal to ambitious candidates with a true sense of their worth and capabilities. Ref: L/13/G

Logistix, 10 Grenville Place London SW7 4RW

01-373 3063 LOGISTIX Telex: 28800

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UNIVERSITY OF GLASGOW
COMPUTING SERVICE

SYSTEMS PROGRAMMER

Applications are invited from persons wishing to join the central Systems team responsible for developing and maintaining the operating system software on the University's ICL 2976 Computer running under VME/B. Suitable candidates will be new or recent graduates with experience of programming languages and use of mainframe computers. Experience of VME/B is desirable but not essential. The successful candidate will be expected to acquire an overall familiarity with the VME/B operating system and to accept responsibility for maintenance and development in specific areas of system software. The appointment will be made on the national Grade 1A scale for Other Related Staff, currently in the range £6,070 - £10,575, with initial placement depending on age and experience.

Further particulars may be obtained from the Secretary of the University Court (Room 18), University of Glasgow, Glasgow G12 8QQ, with whom applications (8 copies), giving the names and addresses of three referees, should be lodged on or before 17th April, 1981.

In reply please quote Ref. No. 4806.

(4922)

Anglian Water Authority

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The Division has for disposal the following:

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For further details contact the Computer Manager at the address below.

LINCOLN WATER DIVISION
Waterside House
Waterside North
Lincoln, LN2 5HA
(Tel: Lincoln 25231
Ext. 238)

COMPUTER SERVICES DEPARTMENT
Re-advertisement

TECHNICAL AUTHOR £9,576-£10,731

Required to set up a technical library, an internal information service and documentation standards for the Department.

Applicants should have a degree or relevant professional qualification (M.B.C.S. or A.M.B.C.S.) and have six years experience in the computer industry.

Previous applicants need not re-apply.

Application forms, available from the Computer Services Manager, Room 1.76, Town Hall and Civic Centre, Sunderland, SR2 7DN, to be returned by Friday 10th April, 1981.

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- Business Analysts

S.P. SUPPORT LIMITED, St. Martin's House, Bull Ring, Birmingham, or telephone 021-632 4304 or 0602 222227.

Targa

IBM MVS

c£9500

Large International Company in Central London require a SHIFT LEADER for their busy installation. The successful applicant is expected to possess the following attributes. He or she will have a minimum of 5 YEARS' experience and be aged over 25 with CURRENT SHIFT LEADER STATUS and proven man-management skills. The specific requirements for this position are a detailed knowledge of MVS/JES2 or JES3, IMS, VTAM, and either TSO or VSPC. An ability to act as a JCL Technician is also expected because of the need to sort out problems on shift. A vacancy also exists for a SENIOR OPERATOR with approximately 3 YEARS experience of MVS who can expect a salary of up to £8,000. Ref. 2387

PDP RSX

c.£5,500

A site in the CITY of LONDON require an Operator for their installation which comprises multi-machines including PDP 11/70 and a VAX. A minimum of 9 MONTHS' experience of PDP hardware utilising RSX, with VMS if possible, is required. A straightforward 3 shift system is in operation with good Company perks. Ref. 3321

BURROUGHS

c.£6,700

A large site based in the CITY has a vacancy within the Computer Department for an Operator. The applicant must have at least 18 MONTHS' experience on ANY LARGE BURROUGHS systems. An excellent range of benefits are available including 3 weeks holiday in first year along with 80p L/V's per day. A 3 shift system is currently in operation. Ref. 3309

ICL

c.£5,000+

Our client based in the CITY has a requirement for an Operator. The Company require a minimum of 3 YEARS' experience on a 1900 configuration. The applicant must be willing to work under a 2 shift system. Excellent benefits are being offered together with numerous promotion opportunities. Ref. 3269

DATA CONTROL

£Neg.

We have two vacancies for people with some Data Control experience. One is a City based Company offering attractive salary with good perks. The other is in the West End and is with a well-known International Company. Both positions are DAYS ONLY. Ref. 3322

10 Lines

**TARGA COMPUTER SERVICES
6 LIVERPOOL STREET
LONDON EC2M 7NH
01-283 9941**

24 HOUR ANSAPHONE

(4988)

SENIOR SYSTEMS ANALYST

Bristol **c.£9,000**

Bendix Limited is wholly owned subsidiary of Bendix Corporation of America, manufacturing Compressed Air Braking Equipment for the European Commercial Vehicle Market.

The Senior Systems Analyst will report to the Data Processing Manager and deputise in her absence. The responsibilities of the function will cover design and implementation of new systems and the enhancement of existing systems as changes require, and over the next 2 years' the review and replacement of the materials requirement planning system.

The basic requirements are a minimum of 4 years' design and analysis work, or programming background in COBOL and preferably TPS, a knowledge of ICL utilities and experience of real-time preferably using TPS. The installation is ICL 1902T with a communications network supporting Videos and Termiprinters with materials planning, stock control, accounting, standard costing and order entry applications.

Included in the Company's benefit package are Private Medical and Permanent Health insurance schemes, Pension and Life Assurance schemes and salary c.£9,000.

Please apply briefly in writing in the first instance to the Personnel Officer.

Bendix

Bendix Limited,
Douglas Road, Kingswood,
Bristol BS15 2NL.
Tel. (0272) 671881

EUROLEX
A European Law Centre Service

DATABASE MANAGER

This is a responsible position for a reliable conscientious person with plenty of initiative. The successful applicant will be working on an important on-line retrieval service so knowledge of a major retrieval software package such as STATUS or STAIRS would be of value. A good understanding of computer systems is necessary; programming experience on text processing applications would be an advantage.

The post will cover the following functions: (a) to generally assist the Database Director in the production of on-line text databases; (b) to oversee the day-to-day processing of source data for incorporation in the databases; (c) to control the whole range of data preparation, including the costs, involved in the production of databases; (d) to take final responsibility for the quality and accuracy of the databases; (e) to devise procedures and programmes for vetting the accuracy of the databases and data; (f) to develop structures for new databases to be added to the system.

The successful applicant should be forward looking, able to anticipate problems and devise solutions. This is an exciting task which requires management skills as well as computer knowledge and will provide a good opportunity for someone interested in this growing area of information systems related to business. The successful applicant will probably be in the age range 25 to 35 years. Salary will be commensurate with age, experience and the responsibility of the post.

Contact: [illegible] on 01-404 4300
EUROPEAN LAW CENTRE, 4 Bloomsbury Square, London. WC1A [illegible]

TECHNICAL SUPPORT ENGINEER

Customer Liaison ■ Europe and USA

The Control Data Corporation of America employs 58,000 people worldwide, engaged in the manufacture of computers and their associated peripherals. At the company's UK plant, situated at Brynmawr on the edge of the Brecon Beacons National Park, we manufacture magnetic media for the computer industry. A £10m expansion programme has recently been completed which has doubled the plant's manufacturing capacity and gives Control Data Corporation the facility to produce products at the very forefront of computer technology.

The Company has built its reputation on the quality of its products and its dedication to after sales technical support. This is therefore a crucial appointment and carries considerable responsibility.

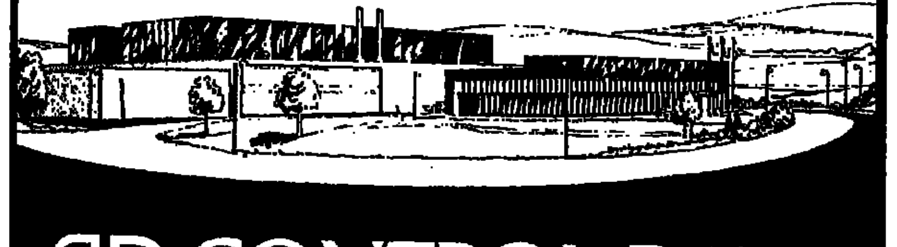
The man or woman we are looking for will have a minimum HNC (Electronics) together with several years experience of the technical problems associated with computer systems, particularly disk and tape drives. In addition to trouble shooting skills, he or she will have powers of tact and diplomacy and the ability to communicate easily with people at all levels.

The nature of the job means that a considerable amount of time (40–50%) will be spent away from home, mainly in Europe but with occasional visits to the U.S.A.

A competitive starting salary is offered, together with a company car, excellent benefits and employment conditions. Opportunities for further advancement are outstanding to people of the right calibre.

Please write giving brief details of your career to Paul Lloyd, Assistant Personnel Manager, Control Data Limited, Brynmawr, Gwent NP3 4YA.
Tel Brynmawr 311000.

(4956)



CONTROL DATA

Computer Professional Recruitment Consultancy

We have been exclusively retained by this client for an assignment which is

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TELECOMMUNICATE with Rob Peeling, 0532 774040, or Mike Green, 01-258 0077, quoting R40, for immediate consideration.

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UNIVERSITY OF EAST ANGLIA
Norwich

Research in Distributed Processing

The Zero Assignment Parallel Processor Project is investigating the potential for parallelism in functional (LISP-like) languages where a large number (hundreds or thousands) of processing elements are involved. Applications are invited for two research posts. Both posts are for a maximum of three years from August 1, 1981. Candidates interested in a shorter period are encouraged to apply. Successful candidates may need to visit related groups in the United States and elsewhere.

SENIOR RESEARCH ASSOCIATE

(Salary scale £6,605-£9,695 p.a under review).

The successful applicant will have a Ph.D. and will work on developing a parallel execution model for the lambda calculus which maps efficiently on to a network, which supports virtual process trees.

RESEARCH ASSOCIATE

(Salary scale £4,795 - £6,985 p.a under review).

The successful applicant will develop a simulation program to explore the properties of the execution model. The work may involve using both British and American computers (via the ARPA net).

Further information may be obtained from: Dr. F. W. Burton or Dr. M. R. Sleep, Computing Studies, University of East Anglia, Norwich NR4 7TJ, England. Applications one copy only which should include a full curriculum vitae together with the names and addresses of two referees should be sent to the Dean, School of Computing Studies and Accountancy, University of East Anglia, Norwich NR4 7TJ not later than 30th April, 1981. In naming the two referees you are particularly requested to give only the names of those who can immediately be approached.

(4930)

SENIOR PROGRAMMER

MANCHESTER POLYTECHNIC
MANAGEMENT INFORMATION UNIT – ADMINISTRATIVE DATA PROCESSING

The Polytechnic has recently taken delivery of a Honeywell Level 6 model 43 minicomputer to be used initially for a new student record system, developing later into a comprehensive management information system.

This is a three-year appointment on the development of these systems.

Applicants must have a sound knowledge of COBOL based upon several years' experience of it, and should preferably have degree level qualifications.

A Union Membership Agreement is in operation under which new employees are required to join a recognised union.

Salary scale: £6870-£7338.

For further particulars and application form (returnable by 13 April 1981) send a self-addressed envelope marked "S/986" to the Secretary, Manchester Polytechnic, All Saints, Manchester M15 6BH.

(4977)

THE QUEEN'S COLLEGE GLASGOW
(A Scottish Central Institution)

LECTURER 'A' in COMPUTING and STATISTICS

Post Reference 81/07

SALARY SCALE:
£5,986-£10,627 (Bar) -
£11,307

This is a new and challenging post, established to develop a college based computer service.

Further particulars and application forms for the above post, quoting the post reference number, may be obtained from:

Personnel Office (CW)
THE QUEEN'S COLLEGE
GLASGOW
1 Park Drive, Glasgow G3 6LP

The closing date for receipt of applications is Friday, 8th May, 1981.

(4914)

LOTHIAN REGIONAL COUNCIL

DEPARTMENT OF EDUCATION
STEVENSON COLLEGE OF FURTHER EDUCATION

Computer Operator

– Department of Business and Computer Studies –

The College equipment includes a 16 terminal ICL 2904/50, a batch terminal mini system and a number of micro systems. Preference will be given to the holders of SNC in Computer Operations/Data Preparation or equivalent qualification.

Salary on Scale £2738-£4923

Application forms may be obtained from the Registrar, Stevenson College of Further Education, Bankhead Avenue, Sighthill, Edinburgh EH11 4DE.

(4894)

Write yourself a brighter future.

To line yourself up with the best opportunities, simply complete the Knight Form and return to us, or telephone now.

Personal

Please write in ballpoint, using block capitals

Surname________ Forenames________Mr/Ms (delete)
Address________

Tel. Home________ Office (discretion will be used)________
Age________Nationality________Car?________
Are you prepared to relocate in UK? ☐ Abroad? ☐ (tick box)

Experience

Place no. of years in box, e.g. IBM 360/370 ....168.......... 4

Machines Please specify model
IBM 360/370.......... ☐
IBM 303X.......... ☐
IBM 43XX.......... ☐
IBM S3/32/34/38.......... ☐
ICL 29XX.......... ☐
ICL 190X/290X.......... ☐
DEC.......... ☐
Burroughs.......... ☐
Univac.......... ☐
Honeywell.......... ☐
Others:.......... ☐
.... ☐
.... ☐
.... ☐

Operating Systems
Please specify version
OS.......... ☐
DOS.......... ☐
George.......... ☐
VME/.......... ☐
RSTS.......... ☐
RSX.......... ☐
GCOS.......... ☐
MCP.......... ☐
Others:.......... ☐
.... ☐
.... ☐
.... ☐

Job Titles
DPM/Systems Manager.......... ☐
Consultant.......... ☐
Project Leader.......... ☐
Systems analyst.......... ☐
Analyst/programmer.......... ☐
Systems Programmer.......... ☐
Programmer.......... ☐
Ops supervisor/manager.......... ☐
Operator.......... ☐
Sales Representative.......... ☐
Other:.......... ☐
.... ☐
.... ☐
.... ☐

TP Monitors & Database
CICS.......... ☐
IMS.......... ☐
IDMS.......... ☐
IDS.......... ☐
Other:.......... ☐
.... ☐
.... ☐
.... ☐

Applications
Commercial.......... ☐
Finance/Banking.......... ☐
Scientific.......... ☐
Process Control.......... ☐
Telecomms.......... ☐
Other:.......... ☐
.... ☐
.... ☐
.... ☐

Programming languages
Cobol.......... ☐
PL1.......... ☐
Assembler.......... ☐
Plan.......... ☐
Fortran.......... ☐
Basic.......... ☐
RPG.......... ☐
Other:.......... ☐
.... ☐
.... ☐
.... ☐

Position sought

Please state briefly the type of appointment you are seeking
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Permanent? ☐ Contract? ☐ Either? ☐ (tick box)
Minimum salary £________Notice required/ Date available________
Signed________Date________

Cut out the whole advertisement and post to the address below. Phone anytime, or for an application form leave your name and address with our answering service. CW/263

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Reporting to the Computer Manager, you will have the perfect opportunity of further developing your skills with the latest technology including planning and implementing new systems throughout the company. The System 80 hardware includes 29 V.D.U.s running in-tandem with the present IBM Computer.

Knowledge gained from any of the following systems will be required:

OS/J Operating System, DMS Data Base
I.M.S. Information Management System
I.C.A.M. Integrated Communications Access Method

Plus programming in either COBOL, RPG II or Assembler.

Ideally, you will also be aged around 30 years and located within reasonable travelling distance of Chessington.

The employment package is excellent, offering an attractive salary and conditions, including non-contributory pension scheme at 15-18% of annual salary, life assurance, subsidised meals, luncheon vouchers, discretionary annual bonus, special fringe benefits, a 35-hour week, all in a progressive busy environment.

Please send your C.V. or brief resume to the Personnel Manager. All enquiries will be treated with the strictest confidence.

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Oakcroft Road, Chessington, Surrey

(4927)

IBM OPERATOR

SALARY NEG.

A leading computer services and systems company has asked us to find an IBM operator with at least 2 years' 360/370 DOS/GRASP experience.

Although currently based in W.1, the company will be moving to Hanger Lane later this year, where a new Data Processing Centre will house a 4341 running OS/VS1 utilising VM, CMS AND GUTS.

The new centre will also house several SYSTIME 6700s, a PRIME 550, and twin HONEYWELL DPS 820s.

Candidates will be given considerable scope to utilise their skills and full training where necessary.

For further information contact Mike Maunder on 01-235 9891 or 04747 6558, evenings or weekends.

Ref. 06/13

(4947)

AGB
Recruitment
Limited

PROCESS CONTROL

Programmers and Analysts with 3+. years' mini or micro Assembler (DEC in particular) experience plus relevant degree required by producer of Industrial Control and Automation Systems. Offices in Herts.

£7-11K

ICL 2900

Designers and Analyst/Programmers with real-time, on-line experience on large 2900's, and some networking/comms knowledge wanted by London Systems House to meet requirements of new and existing projects.

£8-11K

GERMANY PDP 11

Software Engineers with real-time PDP 11, RSX 11M, background sought by small computer team within Industrial Measurement/Production Control Supplier in pleasant Rhineland location. Willingness to learn German essential.

£10-14K

REAL-TIME MINIS

Analysts and Programmers needed to join Hants-based teams working for leading U.K. Systems and Software House in scientific and technical projects. At least 5 years' in real-time required. Coral, Fortran and Assembler or PDP11, DG Nova, Ferranti or GEC desirable.

£8-12K

MICROS LONDON

Experienced or aspiring Sales Engineers sought by leading Microcomputer Manufacturer for the London area. A strong technical background in micros plus experience dealing with clients more important than specific sales experience. Likely candidates will be in age range 25-30.

c.£12K+Car

COBOL MIDDX.

COBOL Programmers to **Team Leaders** urgently required to meet expansion plans of this leading Computer Manufacturer. Based in West Middx. you will be working on the development of new products.

£7-10K

SYSTEMS SOFTWARE

Specialists in Compiler design, operating systems and database design (minis) are being sought by a number of our clients in Central Southern England, Germany and Switzerland. DEC and Pascal experience of particular interest.

£9-17K

U1100 MIDLANDS

Analyst/Programmers in DB design and software support required for U1100 installation in West Midlands. COBOL plus Codasyl database experience (esp. DMS 1100), or Univac operating system knowledge particular sought.

To £10K

ZILOG SURREY

Designer/Programmers being recruited now to work on a new stand-alone, zilog-based word processor. Involved in challenging technology you will work in multi-processor based shared resource systems, message passing interfaces, access mechanisms, etc. Graduates preferred.

£8-10K

WILTS DEC & INTEL

Programmers and Analysts/Programmers with experience in telecontrol, process control or related fields on DEC (under RSX 11M) or Intel equipment can escape to the West Country. Interesting design and development work on technical applications with well established company.

£7-10K

(4062)

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ANALYST/PROGRAMMER

For 1 year

3 years" minicomputer programming (preferably Data General); Fortran; Cobol helpful; experience in accounting, payroll, etc.

SYSTEMS ANALYST

For 6 months or more

8-10 years' D.P. experience including 4 years' programming; IBM 370 or 4331; experience of project management, systems design, database development, control systems, etc.

PROGRAMMER

For 6 months or more

5-6 years' programming, preferably IBM Cobol; knowledge of IBM PROJAGS helpful.

MANY OTHER POSITIONS available.

Interviews will be held in DUBLIN, LONDON, etc.

Phone (0001) 306902 for further details.

(4963)

PROJECT PROGRAMMER

Circa £9,000 p.a.

Cheshire/Staffordshire Border

Our client, one of the world's largest Electronic Companies producing the most comprehensive range of advanced TLC and mini-micro computers, are seeking an experienced programmer.

The ideal candidate will have Real Time computer experience preferably gained in an environment such as M.O.D. Plessy, Major Car Manufacturers, Allied to extensive knowledge of Fortran and Assembler languages.

Comprehensive training is provided with the successful applicant spending their first year at the Company's European Headquarters, where both product training and German language tuition will be provided. Free accommodation and generous expenses are extended during this period. On return to the U.K. the applicant will provide leadership qualities and technical expertise to existing personnel.

Generous benefits package and relocation assistance as befitting a major organisation.

Ref. 71/72.

For further information contact:

Peter Higgins on STD 0274 22824
(Reverse charge calls accepted)
or send full C.V. to:
WINDSOR RECRUITMENT CONSULTANT
THE WOOL EXCHANGE, MARKET STREET, BRADFORD
BB1 7LB

(4983)

SITE SERVICE ENGINEER

MAJOR INSTALLATION

To £10,000 Incl. shift premium

In recent years CTL has won a considerable share of the competitive UK minicomputer market. With substantial investment and even greater emphasis on design, development and support services we are ready to meet the challenge of the 1980s — and achieve targeted growth.

One of our most complex projects is an advanced custom-built communications system for a major public service organisation in London. CTL hardware and software installation is complete but software support, preventative and remedial maintenance is carried out by resident engineering teams.

As one of the Senior members of this team you'll be responsible for fault finding and fixing to component level on processors, stores, disks, printers and comms equipment. You'll also act in an advisory capacity on hardware and software maintenance problems as they arise so an innovative mind and the ability to assimilate highly complex technical concepts are essential.

Ideally qualified to degree or HNC level, you must have had substantial experience in a similar field engineering role and be prepared to work on a rotating shift system. Good communication skills and a high degree of self-motivation are essential qualities.

A good basic salary is enhanced by a shift premium bringing potential earnings to around £10,000 p.a. A range of benefits are also provided.

For more information or an application form telephone John Wilson, Area Service Manager on 01-606 6307. Or write to him with full career details at: CTL, 6-8 Long Lane, London EC1A 4JH.

CTL Computer Technology Limited

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IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY

SYSTEMS ANALYST

Administrative Computer Unit
(Re-Advertisement)

Experienced systems analyst required to assist with the further development and integration of the College's central administration computer systems. Experience in the finance field advantageous.

Salary in Administrative Grade II range £11,127-£13,827. Superannuation under USS.

Five weeks' annual leave.

Further particulars and application form from the Personnel Secretary, Imperial College, South Kensington, London, SW7 2AZ (telephone 01-589 5111, ext. 2003). Closing date: April 15, 1981.

(4872)

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Computer Networks Development

Posts are available in the Computing Division to work on a number of developments in the area of computer networks. The Science Research Council has a large X25-based network covering most of the country and this is still being actively developed.

Locally the Laboratories are investigating both Cambridge Rings and Ethernets as a possible basis for a local area network covering the Chilton site.

The Rutherford and Appleton Laboratories have strong links with CERN and are participating in the European STELLA experiment on high-speed broadcast communications via satellite.

Applicants should have a degree in computing or some related subject and, preferably, some experience in the network area.

Posts are based at Chilton and will be in one of the following grades:

Scientific Officer	**£4,809–£6,480**
Higher Scientific Officer	**£6,075–£7,999**
Research Associate (fixed 3 year term)	**£5,862–£8,006**

Appointment to a salary scale point above the minimum may be considered for candidates with good qualifications and particularly relevant experience/specialist training.

The Laboratories are a friendly community with their own restaurant and extensive sports facilities nearby. We offer excellent working conditions and benefits include a local transport service, generous holidays, sick leave allowance and a non-contributory superannuation scheme.

For an application form please write to: Mary Elizabeth Fry, Personnel Group, Science Research Council, Rutherford and Appleton Laboratories, Chilton, Didcot, Oxon OX11 0QX, quoting reference VN915. Closing date: 10th April, 1981.

Rutherford and Appleton Laboratories

MYRIAD

DIGITAL TELECOMMUNICATIONS

PROGRAMMERS (1-3 years) : GRADUATES (1981)

WILTSHIRE **£NEGOTIABLE**

These are excellent opportunities for programmers, with experience of real-time systems, and students expecting to graduate this year to join a company at the forefront of development in both computer controlled and fully digital telephony systems. This is an expanding field which will become increasingly important through the next two decades and the company is therefore committed to long-term development.

You will become involved in:

★ Advanced digital switching technology
★ CCITT signalling systems
★ Telephony applications programming
★ Device level software design
★ Admin. and subscriber facilities

From the Programmers we are seeking:

★ 1-3 years' real-time mini-computer Assembler or high level programming

From the Graduates:

★ Ideally the expectation of a good Computer Science degree

These interesting positions, with a successful member of an International group, offer a high commencing salary entirely dependent on experience. This is supported by excellent benefits including a comprehensive relocation scheme, five weeks' holiday and opportunities for overseas travel. Telephone the number below to discuss these vacancies in detail. Alternatively either return the coupon or write to us quoting reference RN1/2603/CW.

SYSTEMS ANALYST

This is an exciting opportunity for an experienced Systems Analyst to effect an important career move.

A substantial City-based international organisation is seeking to recruit an additional Systems Analyst to develop Real-Time Financial systems within an extensive communications network.

£ NEGOTIABLE

If you can offer:

★ Two years' plus IBM experience
★ Involvement in at least one project
★ The ability to solve problems

THE CITY

Our client can offer:

★ A stimulating and highly professional environment
★ Real-time design
★ Extensive development work using advanced techniques
★ Starting salary to £12,000 + excellent benefits

Our client will also consider ASSEMBLER Analyst/Programmers who wish to move into a full systems analysis role.

REF. E1/2603

SOFTWARE DESIGN GROUP LEADER

SLOUGH **c. £11,000**

An extremely challenging opportunity has arisen for a senior technician to join our client in the development of sophisticated CONTROL SYSTEMS with DISTRIBUTED INTELLIGENCE. The company is currently undertaking a major development programme in order to extend its established lead in the field of environmental control and energy conservation.

Controlling and motivating a team of software engineers, the Software Design Group Leader will liaise closely with hardware designers in the development of industrial products using distributed 8080/5 microprocessors. You should be able to combine an in-depth knowledge of ASSEMBLER level programming and, ideally, an understanding of communications systems, with the ability to lead a skilled team.

To discuss this position in detail, please contact Myriad Appointments on 01-353 0981 quoting reference RS1/2603/CW.

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA Telephone 01 353 0981 24 Hours

Outstanding Opportunities for Project Managers

N.W. England. Major IBM Site.

Our client is the Computer Sevices Division of a highly profitable organisation and provides a comprehensive computer service to the companies within the Group.

Functionally the Group is organised into four main sub-divisions and the systems development department is organised similarly to reflect this.

Our clients systems are large, the hardware is large IBM, and data volumes can be high at peak trading times and candidates must have previous experience developing large systems using sophisticated hardware and software.

We are seeking applications for the following two project manager vacancies:

Stock Control Systems

Up to £12,000 + car

A project manager is required to lead a permanent team of systems analysts and programmers and to be responsible initially for all stock control systems past, present and future for all group companies.

Your team is permanent and not merely assembled for the duration of a project and as project manager you are in effect the systems, manager/advisor/specialist who must identify with, look after and lead your own group of user companies. You would not only be the technician who supervises specific work you are the 'front man' who will lead your users to seek better and more effective use of computer services.

To undertake these arduous and stimulating duties we seek applications from candidates with a number of years experience developing commercial systems, but with extensive experience of stock control systems. You will have a programming background and must have already controlled, using formal methods of project control, a team implementing a number of major systems, which must include complex stock control systems, from feasibility study through to implementation.

This is a senior position requiring a candidate with the personality, flair and imagination to fulfil a demanding role in a progressive data processing division. (Ref CW/8107)

Manufacturing Systems

Up to £12,000 + car

A specialist with extensive experience developing computer based manufacturing systems is required to take responsibility for the development of computer systems throughout the groups manufacturing division.

Initially you will work alone identifying the needs for computer based systems and in due course will build a team and lead it in the installation of integrated database systems throughout the division.

Applications for this position are invited from well qualified candidates, preferably graduates, who must have proven management ability and be excellent communicators who can quickly establish an effective rapport with users. Technically candidates must have extensive experience in computing, preferably in a large scale IBM installation and have led successfully a number of projects from feasibility study through to implementation. **Specific experience of major production scheduling packages is important and it would be particularly advantageous if this included CAPOSS, which is** already in use.

This is a most challenging senior position which offers the successful candidate a ground-floor opportunity to identify major new opportunities for computer systems development and then be the key agent in providing a total service to the Groups manufacturing division. (Ref CW/8108)

Excellent remuneration and benefits packages will be negotiated including a salary of up to £12,000 per annum, significantly more for an outstanding candidate, a company car, non-contributory pension, BUPA and generous relocation expenses in appropriate cases.

Interested candidates are invited to contact Ivor Norton at the Harrogate Office quoting the appropriate reference.

Ivor Norton Management Services Ltd.

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Harrogate 66628

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SOFTWARE MANAGER ZIMBABWE

c £15,000 + Package

A business systems distributor with a turnover of over £1 million, is seeking a Software Manager to take responsibility for their Zimbabwe Pre-Sales Support Operation. He/she will have carried out various feasibility studies, and designed and implemented at least two major systems. The successful applicant is likely to have business and accounting experience, together with up-to-date hardware/software experience, preferably orientated towards DEC/PDP. This is an excellent opportunity to develop your skills in a rapidly expanding market, together with the opportunity of a share in the business.

ANALYSTS to PROJECT LEADER level LONDON

to £13,000 + Package

Our client is an International Organisation with a large investment in the development of online systems and are seeking development staff at all levels. The successful applicants will have a minimum of 2 years' programming experience, preferably in COBOL or ASSEMBLER, together with a proven track record in systems development. There is ample opportunity for career progression in a dynamic environment.

SYSTEMS ANALYST SURREY £11,000

An International Manufacturing Organisation is looking for a Systems Analyst with a knowledge of COBOL and/or RPG 2, to perform a key role in the development of major online systems. This position will involve communication with all levels of management, and some travel may be involved.

PROGRAMMER – CUSTOMER SUPPORT LONDON

c £9,500

A major company developing a wide variety of systems for their worldwide network of customers, is seeking a Programmer with a minimum of 12 months' experience in COBOL or BASIC, with a knowledge of FORTRAN. This position would ideally suit a self-motivated person who wants to develop their skills in the realm of customer support. A vacancy also exists for a backroom person with a flair for ASSEMBLER. Excellent prospects.

BASIC (PLUS) PROGRAMMERS LONDON

c £9,500

We have several vacancies for Programmers with up to 18 months BASIC, BASIC +, or AIMS experience, with the opportunity to work on batch and realtime financial systems. Excellent opportunities for career progression, plus attractive fringe benefits, including low interest mortgage facility, bonus scheme, restaurant and season ticket loan.

SHIFT CONTROLLER c £11,500

This large organisation is seeking someone with extensive operational and supervisory experience to take charge of one of their shifts running under MVS.

SHIFT LEADER LONDON c £9,700

A financial organisation needs a motivated and technically competent person to supervise the running of one of their two shifts. At least 4 years' IBM experience is required for this position, together with an in-depth knowledge of DOS/VS, POWER/VS, associated Utilities and JCL, with CICS and VTAM. Attractive fringe benefits include mortgage subsidy.

BURROUGHS OPERATOR LONDON c £7,250

Our client is looking for a BURROUGHS B6700/6800 Operator with 1-2 years' experience, to work on a variety of online commercial systems.

ICL OPERATORS LONDON c £7,000 + Fringe

Expanding installation is seeking Operators with up to two years' ICL 1900/2900 experience, plus a working knowledge of GEORGE 2, or VME/B. Excellent prospects.

The above vacancies are only a small selection taken from our current files, and we are always pleased to hear from computer professionals wishing to further their career objectives.

BUICK COMPUTER SERVICES
RECRUITMENT DIVISION
72 Rochester Row, Victoria, London SW1P 1JU
Tel. 01-834 0061 (10 lines). 24-hour answering service

SalesExecutives

SOUTH EAST
C£17,000 + 2.0 LITRE CAR
HIGH BASIC + G'TEE

Providing truly cost effective solutions requires a unique kind of follow through.

With computer-power, inconceivable 10 years ago, it has proved vital to have a marketing strategy which is sensitive to the needs of the end user and a programme of enhancement to suit their needs in the future.

The result is powerful but inherently flexible mini hardware, fully developed software and a support team both inovative and practical.

Combining these has accelerated the demand for the company's product and created opportunities for both the specialist and the generalist with either a commercial or technical/scientific background.

If you have a successful sales track record and the ability to manage and coordinate a high level sales campaign, telephone: **DICK GLAZEBROOK** on **01-405 0442** or send a brief C.V. for his attention to: High Holborn House, 49/51 Bedford Row, London WC1V 6RL. Any approach treated in strictest confidence.

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London Birmingham Manchester

FACILITIES MANAGEMENT BUSINESS SYSTEMS CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY
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SENIOR PROGRAMMERS • Victoria • c. £9,000

- ★ To become involved in "State of the Art" development using fully conversational IMS DB/DC.
- ★ 2 years' plus experience in COBOL with some CICS/DL1 or IMS.
- ★ A first-class Multinational Company with excellent working environment, benefits and prospects.
- ★ Candidates with some supervisory experience will be shown preference.

Ref: PJ 80188

CHIEF PROGRAMMER

Central London **To £12K**

- ★ 6/7 years' COBOL Programming – UNIVAC exp. preferred
- ★ Large involvement in Database applications
- ★ High degree of responsibility
- ★ Excellent benefits as expected of major company

Ref: PJ 81270.

ANALYST PROGRAMMERS and PROGRAMMERS

Middx. **To c. £9K + Car**

- ★ Minimum 2½ years' COBOL (pref. IBM)
- ★ Hopefully some supervisory experience
- ★ To work on development

Ref: PJ 81265

ANALYST PROGRAMMERS and PROGRAMMERS HP 3000

Herts., City & Beds. **Max. £10½K**

- ★ Developing Systems using HP3000/IMAGE/VIEW/QUERY
- ★ Requirements for BASIC & COBOL
- ★ Two requirements for SPL (will consider ICL PLAN)

Ref: PJ 81264

PROJECT LEADERS To c. £14K
TEAM LEADERS To c. £13½K
ANALYST/PROGS. To c. £12K

Central London **IBM**

- ★ Major development plans
- ★ Preferably PL/1 financial background although good quality is the prime consideration

Ref: PJ 80219

REAL TIME SYSTEMS PROFESSIONALS

London, Berks., Sussex and U.S.A. **Pounds Unlimited**

- ★ To develop Communications System and Operating Systems
- ★ Preferably experience of PDPs or Micros, Teletex, Viewdata
- ★ Excellent companies, perks and prospects

Ref: PJ 80206

DOS COBOL PROGRAMMERS

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OVERQUOTA COMMISSION IS 8%.

هكذا منه الأصل

FOR FURTHER DETAILS CONTACT:

JOHN BELLAMY AT:
INSIGHT MARKETING AND PERSONNEL CONSULTANTS LTD
AUSTIN HOUSE, CHARLOTTE STREET, MANCHESTER
TELEPHONE: 061-236 7026

(4971)

Shell Chemicals

COMPUTING PROFESSIONALS-CENTRAL LONDON

Shell Chemicals are sophisticated users of computing technology embracing data base and on-line systems developments impacting on all areas of the business. We are in the process of establishing a development group in our central London (Strand) offices to satisfy a growing portfolio of developments for Head Office and corporate systems. We require people who have a similar professional approach to computing as ourselves and in particular:

SENIOR ANALYSTS–salaries up to £14,000 p.a.

capable of identifying business requirements and with a proven track record in information planning, analysis and project management.

DESIGNERS–salaries up to £10,000 p.a.

experienced in on-line systems design under IBM, CICS. DL1 and Data Dictionary experience would be an advantage.

PROGRAMMERS–salaries up to £10,000 p.a.

with at least 3 years IBM Cobol experience and fully conversant with CICS, DOS/VSE and structured techniques. DL1 experience would be an advantage.

We would like to hear from men or women who can meet the above requirements and wish to enjoy the benefits of a computing career with Shell. Other benefits include London Allowance, an excellent contributory pension scheme and, where appropriate, generous relocation expenses.

In the first instance, please telephone or write for an application form to:–

Pam Blythe, PRR/12, Shell Chemicals UK Limited,
Manchester Road, Urmston, Manchester M31 4AL.
Tel: 061-776 3417.

CONTRACTS HOLLAND

c £350 to
URGENT

c £750 PER WEEK
URGENT

LONG-TERM CONTRACTS

Our clients require Analysts with experience of **PDP8's, preferably in a process control** environment. **A working knowledge** of **Dutch** would be a distinct advantage, though not essential.

This is an **urgent** requirement so send your **C.V.** without delay, and telephone **Geoff Cave** to arrange for an early interview.

TELECOMMUNICATIONS SOFTWARE ENGINEERS

IBM PL/1 or COBOL
PROGRAMMERS
IMMEDIATE U.K. START
1900/2900 FORTRAN Programmer PDP II
RSX IIM **DECNET** Programmers–IBM
4300 CICS–Cobol Programmers
IBM 8100–Cobol Programmers
PRIME Cobol Analysts and Programmers
NCR **NEAT III**–Programmers

For further details phone JANET – 021-622 3040

MVS Implementation

France **to £2,200/month**

We are seeking an experienced Systems Programmer to implement MVS/SP at a twin 4M 4341 installation. The assignment is an open-ended one, initially for 6 months, at an attractive location in central France. Applicants should have at least 3 years systems programming experience, including one year or more of MVS work, and must be prepared to take on responsibility for all aspects of the implementation.

IMS Technical Support

Holland **£1,900/month**

We are seeking a technically oriented Analyst Programmer to work with a small team in the Netherlands on the development of an international data collection and distribution system based on a centralised IMS Database. Duties will include the provision of IMS technical support to the group as well as the design and implementation of enhancements to improve system efficiency. In addition to a thorough knowledge of IMS DB/DC candidates should have Cobol experience and a knowledge of assembler would be an additional advantage.

CDS is a 45 strong Anglo-Swiss Consultancy specialising in the following areas:
- Systems Programming – MVS, VS1, VM, DOS(VSE), ACF, IMS/VS, CICS/VS.
- DB/DC Application Development – Particularly IMS DB/DC, DL1 & CICS.

For further details of the above positions or for an informal discussion on future European or UK assignments please contact us at our UK offices or on our private numbers at evenings/weekends: Brian Bidston 03446-5385 or Jim Shaw 0990-24546.

cds The IBM System Software Specialists

CDS Ltd, 67–73 Park Street, Camberley, Surrey GU15 3PE. Tel: 0276 26845. Telex 858062

MYRIAD

SENIOR SYSTEMS ENGINEERS

OFFICE SYSTEMS FOR THE EIGHTIES

NORTH WILTS **£10,000-£13,000**

We are seeking enthusiastic and well-motivated senior engineers to join a specialist group which has responsibility for the evaluation, definition and development co-ordination of advanced systems for Telecommunications and Information Processing.

The Group has a major development plan which, in conjunction with the existing products, will enable the company to make a major impact upon the Office Systems market of the next decade.

The successful candidates will offer a proven background in systems development including substantial experience of one, or more, of the following areas:

★Hardware development of digital electronics in communications and computer interfacing

★ Digital systems simulation for modelling future business systems

★ Software for computer communications and filing systems, editors, etc.

★ CCITT standards and protocols for digital information exchange.

Engineers will be educated to degree level, be prepared and able to take a total system approach, and be sufficiently experienced in one or more of the above fields to take a given project to completion.

These positions offer excellent scope for technical originality in a demanding and exciting field. Conditions of employment are excellent and include comprehensive relocation expenses where appropriate. To discuss the scope of these opportunities in detail and arrange an interview either telephone Myriad on the number below or write quoting reference

RN3/1903/CW.

TELECOMMUNICATIONS SOFTWARE DESIGNERS

WILTSHIRE £ NEGOTIABLE

One of the market leaders in the field of telephony systems, our client is seeking additional Senior Software Designers/Programmers who will play a major role in the development of the new generation of fully digital telephone switching systems.

The successful candidates will offer experience of:

★ Telephony software development
★ Mini and micro systems
★ High-level languages (CHILL/PASCAL/CORAL)

The company offers excellent conditions of employment including high base salaries and relocation expenses where appropriate. To discuss the organisation and these positions in detail telephone Myriad on the number below. Alternatively write, quoting reference

RN4/1903/CW.

BUILD A DEC NETWORK

UXBRIDGE **£9-£10½K**

A recently-installed PDP 11/70 forms the heart of a distributed processing network that will support twelve remote sites, thereby providing advanced interactive systems for local users.

The Software Group is now seeking to expand its team of specialists by recruiting a TECHNICAL PROGRAMMER with RSTS/E operating system experience. BASIC + 2 knowledge is highly desirable but applicants with a sound hardware and telecommunications background will be equally considered, as the Group is currently tuning and further developing the network.

★ RSTS/E
★ REMOTE TERMINALS
★ TELECOMS. SYSTEMS
★ REAL-TIME SOFTWARE
★ RMS/FMS TRAINING
★ BASIC + 2

The Company is proud of its international reputation as an employer offering a secure and positive future along with a first-class benefits package, including relocation expenses where appropriate.

REF: S1/1903

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA Telephone 01 353 0981 24 hours

Systems Analysts and Computer Operations Supervisors

Your Real Time Minicomputer Experience could be worth £20,000 after tax in Saudi Arabia right now.

INFORMAL INTERVIEWS IN LONDON AND MANCHESTER

Our client, the world's largest oil producing company, is actively involved in assisting the Saudi Government in major infrastructure development programmes.

A major project involves a sophisticated network of Hewlett Packard 1000E minicomputers linked together by a microwave communications system to provide a substantial data base.

This new turnkey contract is in the process of delivery and comes on-stream in 1981. It provides a unique opportunity for ambitious Systems Analysts and Operations Supervisors with real-time minicomputer experience to gain rewarding career experience overseas.

An attractive compensation package includes low-cost air-conditioned accommodation, medical care, generous leave, excellent recreational facilities and the opportunity of truly substantial capital accumulation.

Find out more. We will be holding informal interviews at our London and Manchester offices next Monday and Tuesday 30 and 31 March, 1981 from 3 p.m. until 8 p.m. If you cannot make these times, telephone Patrick Shaw any day during normal office hours on 061-228 6521 or Andrew Duncan-Brown on 01-631 4411 or write, quoting reference number MDK/9015 to Moxon Dolphin & Kerby Ltd., York House, York Street, Manchester M2 3BB or Moxon Dolphin & Kerby Ltd., 178-202Great Portland Street, London W1N 5TB.

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HOLLAND·FRANCE·UNITED KINGDOM

CHALLENGE! INDUSTRIAL SYSTEMS! REAL TIME!

GERMANY·SWITZERLAND·BELGIUM

CAN YOU offer experience in Software Design for R/T processing?

CAN YOU take charge or be part of a team?

DO YOU have experience in any of the following:

PDP 11, ARGUS 700, R30, FOX 3, Eclipse, GEM 80?

If the answers to any of the above questions are **YES**, we want to hear from you.

Digital Applications International is an established consultancy with a reputation for excellence in the application of mini and micro computers to real time processes. The Company has offices in London, Manchester and Frankfurt a.M. We are seeking people with sound experience and preferably a degree. Some work may involve travel to foreign parts, particularly in Western industrialised countries. Salary dependent on what you have to offer, but in U.K. around **£10,000** plus profit sharing and other benefits.

Please telephone or write to Richard Daniell, 01-734 5486.
Digital Applications International Ltd.,
Atholl House 24 Warwick Street
London W1R 5RD

(6001)

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For these and many other vacancies, nationwide, please contact LEE WOOD, 567 7466, 71, THE MALL, EALING, LONDON W5 5LS.

(6006)

Analyst Programmer Up to £9,795

Cobol Programmer Up to £9,363

At the London Borough of Harrow we've expanded our computer function. We have an IBM 4341 operating under VM and DOS/VSE, providing both batch and on-line service, and teleprocessing is under the control of SHADOW II. Our plans include the growing use of data base and teleprocessing techniques.

This is all part of a structure created to develop and install new projects. Our applications include Libraries, Forward Planning, the Area Health Authority, the Electoral Roll, Engineering and Architects Departments as well as well as the usual financial applications.

To carry through this ambitious plan we require first-class and experienced men or women. Applicants should have a proven ability in COBOL programming, preferably on IBM equipment. A sound working knowledge of systems design is necessary for the more senior appointments.

We can offer many benefits and advantages: flexible working hours, relocation package for suitable applicants, 23 days' holiday, season ticket loans, pension scheme, sick pay, etc. Pleasant modern offices with subsidised restaurant and our staff club. Easy access by public transport and ample parking space. Shops, restaurants and a superb leisure centre within a few minutes walk. And excellent prospects for both job satisfaction and career development.

For further information and informal discussion, contact our Computer Manager, Gerald McDonough, on 01-863 5611, ext. 2202.

Written applications should be sent to the Computer Manager, London Borough of Harrow, PO Box 21, Civic Centre, Harrow, Middlesex HA1 2UJ.

Harrow

(4939)

TP Systems Programming

SOUTHAMPTON up to £10,500

At our Southampton Computer Centre, we at Southern Gas have a large developing IBM 3032 and 3031 installation under OS/VSI [shortly to become MVS] pending on-line facilities to over 400 local and remote terminal users. Software installed includes ACF/VTAM, ACF/NCP, NCCF, NPA, CICS/VS, IIS, VSPC, VSAPL, DL/1 and ROSCOE. Future plans include NPDA, MSNF and Data Dictionary.

In order to support the continued growth of new and existing CICS/VS – based on-line applications, and an increasing demand for personal computing facilities, we wish to expand the TP section of our Technical Group. This is a challenging environment and we are particularly interested in candidates who can make a positive contribution to the Group's work.

Applicants [men or women] should have had at least two years IBM systems or application programming experience and possess specialist skills in some of the following areas:–

- Assembler, PL/1 or COBOL.
- CICS/VS.
- VSPC, VSAPL, Basic.
- DL/1.

Excellent conditions of service apply; assistance given with cost of moving in appropriate cases.

For an application form please write to:–
Senior Personnel Officer [Recruitment],
Southern Gas, 80 St. Mary's Road,
Southampton, or ring us at any time on
Southampton [0703] 31818,
quoting ref. P.113/CW.

(6008)

SOUTHERN GAS

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ims INTERACTIVE MARKET SYSTEMS UNITED STATES

$16-20,000

Rapidly growing 75 person New York based company offering interactive computer services to the Advertising and Market Research Communities in the US, Canada and Great Britain has openings for

PROGRAMMERS

DEC 10/20 experience [illegible]

CHAIRMAN
Interactive Market Systems (UK) Ltd.
Grosvenor Gardens House
Grosvenor Gardens
London SW1W [illegible]

Contracts

IBM CICS EXP. SYST. ANAL.
IBM COPICS EXP. SYST. ANAL.
IBM ADBAS EXP. SYST. ANAL.
IBM OS/VS IMS ADF ANAL. PROG.
IBM OS ASS CICS DL1 PROG.
IBM DOS VS CICS DL1 SYST. PROG.
IBM DOS VS COBOL CICS OR DL1 PROG.
UNIVAC 1100 FORTRAN COBOL PROG.
2900 EXEC APS MANAGER PROG.
1900/2900 DME COBOL ANAL. PROG.
PDP RSTS/E BASIC + PROG.

Immediate starts, 3 to 12 months. New contracts starting during the next six weeks.

Phone JOHN SHARPE immediately for further details.

Computer Search
01-404 0152

(6003)

The Informatics Grand Tour.

Informatics will be interviewing in London and Manchester for positions in the USA during the week of April 6, 1981. To arrange a confidential expense-paid interview send resume immediately or telephone Ms. Angela Nahni at our London office (01-405 8546). Reverse charges accepted.

Informatics Inc

Africa House
64-78 Kingsway
London WC2B 6AL
01-405 8546

(4939)

LONDON BOROUGH OF BROMLEY
BOROUGH TREASURER'S DEPARTMENT

SENIOR COMPUTER OPERATOR

C1.2 £5073-£5403
+ 14% shift allowance
(Ref. 8.827)

Applications are invited for this post which is responsible through a Shift Leader for the operation of Council's ICL 1903T 192K computer. The George 3 operating system is used to support in the region of fifty on-line terminals plus batch processing. The machine will be replaced early in 1982 with an ICL 2966 model using the CME operating environment in conjunction with VME/B.

Experience – a minimum of two years' experience is desirable together with knowledge of the George 3 or VME/B operating systems.

Application forms from Assistant Chief Executive (Head of Manpower Services), Town Hall, Bromley, Kent. Tel: 01-464 3333, Ext. 3318.
Closing date 31st March, 1981.

HP3000 COBOL PROGRAMMER

1-2 year's experience
CONTRACT 3-6 months
Call: BOB GREEN
COGENT SYSTEMS LTD.
on
01-794 0179
Eve./Wkends 01-904 7844

CONSULTANT PROGRAMMERS/ ANALYSTS

Three years' experience. Circ. £9,000.

CITY CENTRE BUREAU
TEL. 785 9361

(4664)

SYSTEMS ANALYSTS

With at least 3 years' ADP experience have an opportunity to become involved from feasibility studies to total implementation.

PROGRAMMERS

With at least 18 months' experience have an excellent opportunity to take a leading part in a small development team.

A few openings have arisen in an impressive and major Central London Computer Organisation structured to give maximum satisfaction within a congenial environment. The installation comprises a large ICL 2900 configuration using COBOL and IDMS as well as other supporting hardware and new developments in minis.

Systems Analysts are involved in the detailed analysis, design and specification of approved projects, both batch and on-line. Projects undertaken include general system descriptions and flow-charts, sub-system specifications, costing and staff schedules and may entail making verbal presentations.

Applicants should have not less than three years' ADP experience including at least one as a Systems Analyst and must be professionally acceptable to the user sections with whom they will have close working relationships. Full training in the computer equipment being used will be provided.

Starting salary within the range £7,966 - £8,716 according to qualifications and experience. Promotion prospects, good holidays, non-contributory pension scheme.

The programming development covers design, coding, testing and documentation within a small team environment enabling Programmers to support team leaders and guide trainees.

Applicants should have at least 18 months' programming experience which should include working under an advanced operating system and participation in the successful implementation of a large system. Experience of a transaction processing system and knowledge of IDMS would be an advantage. They should possess a high degree of self-motivation and will be expected to take a leading part in the work of the team.

Starting salary within the range £5,916 - £8,446 according to qualifications and experience. Promotion prospects, good holidays, non-contributory pension scheme.

Phone today on 01-439 3410 (Answering service outside office hours), and we will send an application form with a view to arranging an early interview. Alternatively, write to Confidential Reply Service. Ref: ASS 8156, Austin Knight Limited, London W1A 1DS. Applications are forwarded to the client concerned therefore companies in which you are not interested should be listed in a covering letter to the Confidential Reply Supervisor.

(4997)

[illegible]

Midlands

Our client is currently seeking Senior Operators, Shift Leaders and Deputy Shift Leaders with experience of IBM 370/158 – OS/VS1.

Company are offering very good career prospects with a salary range of £5,100-£7,750. Excellent benefits together with generous relocation package.

For details of these and other opportunities for operators, contact Elaine Revell or Joanne McKeggie on 01-491 4706.

Knight

Knight Computer Services Ltd.
14 Old Park Lane, W.1 (OP Agy)

(5002)

CONTRACTS

HONEYWELL IDS/TDS ANALYST/PROGRAMMER
Starting April for London and South-East

NCR HEAT 3 LEVEL 2 PROGRAMMERS
Starting A.S.A.P. for London

Phone NOW! 01-423 2166 or 01-423 1963

VIKING RECRUITMENT LIMITED
Viking House, Peterborough Road, Harrow, Middx., HA1 2XU

(5011)

COMPUTER CAREERS IN AUSTRALIA

For the kids!

If you have 3 years relevant current D.P. experience write for details and brochure to S.M.O., Agent General for Victoria, Victoria House, Strand, London, WC2B 4LG.
Interviews will be held in London and Manchester during July 1981.

TEAM LEADER

ESSEX **to £11K**

You are a senior programmer who has worked in a banking or insurance environment on an IBM mainframe. You have supervisory ability, know PL/1, Assembler and COBOL, and are experienced in Database and Teleprocessing techniques.

(NW1684)

SNR PROG.

CITY **£10K**

Our clients are seeking a senior prog. with 4 years' COBOL, some of which should have been spent in an IBM environment – Mortgage subsidy – opportunity to learn CICS & IBM Methology.

(PK1645)

SYSTEMS PROG.

SUSSEX **to £9K**

Attractive South coast location for DOS/VS systems prog. on IBM 4331. Engineering Co. Design, program and maintain software.

(NW1622)

PROG/ ANALYST

WEST LONDON to £9,250

You are a COBOL programmer in an IBM environment. You have written your own specs or have worked closely with an analyst. You want to gain CICS and DL/1 experience in a developing department with great fringe benefits.

(NW1595)

BRANCH MANAGER

CITY **c £20K+car**

You have the ability to lead and motivate sales managers and representatives. You have good recruitment skills. You understand in-depth bespoke software applications in COBOL. You will have worked for a mfr., s'ware house or turnkey systems house, and will have a successful sales record. In fact, you're quite a person.

(NW1582)

TEAM LEADER

BUCKS **£10K**

Preferably at least 5 years' IBM experience. In-depth knowledge of IBM COBOL, and DOS, CICS/ASSEMBLER experience an asset. Supervision and training of programmers.

(JA1659)

PL/1

CITY **to £11.5K**

4 years' prog-analysis experience an asset – commercial applications – large IBM mainframe utilising TP – Excellent prospects and training.

(PK1660)

SALES

W. COUNTRY **£11K+car**

3 years' selling, cash registers or related point of sales systems to sell to retail trade. Based in Bristol or Exeter. Full product training given.

(JA1662)

ANAL/PROG.

NORTH HERTS **£10K**

To work on Mini/Micro based systems – any high level language and some analysis. Wide career progression limited only by your ability.

(PK1636)

SNR ANALYST

HERTS [illegible]

[illegible]

SYSTEMS ANALYST

HANTS **£11K**

Our client seeks people [illegible]

Computer Search Ltd.

01-404 0152

Norwich House, 13 Southampton Place, London WC1A 2AJ

هكذا من الأصل

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

A GREAT DEAL TO OFFER

When you're talking about the foremost manufacturer of minicomputer/terminal systems you're talking about our client.

They have an enviable track record; they have the products, both hardware and software; they have the support both in marketing and technical back-up.

To keep pace with the demands of the market they need more good people.

SUPPORT

c. £10K+Car

Based in the Northern Home Counties, you will have several years' experience of Cobol programming and analysis. A good understanding of basic business applications and the ability to assist both the sales team and the company's clients. Good basic salary + car.

Please contact Diane Oubridge

SALES PEOPLE

c. £20K + 2L Car

Based in either the South, the City or the Northern Home Counties. Experience of selling both hardware and software solutions in a stand-alone or distributed systems environment. High basic salary, high guarantee, achievable quota + good fringe benefits.

Please contact Tony McGrath

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

UCA

SPRING TIME FOR A CHANGE

IBM DOS OPERATORS

Essex **£6,000**

You're not a No-Go. Neither is this go-ahead expanding company based near Colchester, using a 4341 with DOS/VSE. With relocation assistance, mortgage assistance, canteen, pensions, holidays and sports and social club. If you have one or more years' relevant experience, don't be an outsider and call me.

CW 13/1 Mervyn

OPERATORS/ SENIOR OPERATORS

London **To £8,500**

This international centrally situated company will pay a generous salary for the right person, who has 3 years' minimum IBM DS operating experience, with MVS and JES 3. Knowledge of JCL is also desirable. There are excellent company benefits to be enjoyed. Ring now for further details.

CW 13/1 Mervyn

CONTRACT ANALYST/ PROGRAMMERS

To £500 p.w.

IBM COBOL CICS	S. LONDON	3 MTHS.+
IBM COBOL CICS DL/1	MIDDX.	3 MTHS.+
IBM CICS COMMAND LEVEL	HERTS.	6 MTHS.+
IBM DOS/VSE SYSTS. PROG.	BERKS.	3 MTHS.
IBM SYST. 38 RPG II	S. COAST	3 MTHS.
ICL 2904 MTS 7500	BUCKS.	3 MTHS.
UNI 1100 COBOL EXEC 8	LONDON/BUCKS.	3 MTHS.
IBM PL/1 OS MVS	SAUDI ARABIA	1 YR.
ICL 2960 VME/B IDMS	MID. EAST	1 YR.

DATA COMMUNICATIONS SALESMEN

S.E. England **To £18,000 + Car**

One of the U.K. market leaders in communications hardware with a turnover of £12 million last year is expanding fast. It now requires five more salesmen to meet market requirements for their very successful products of modems, multiprocessors, network analysers and message switching systems (the message switching salesman should live in the Western Home Counties). ALL their salesmen reached QUOTA LAST YEAR so apply now and enoy a truly successful career. (You must be under 40.)

CW 13/3 Michael

SENIOR SALESMEN

London & Home Counties **To £20,000 O.E. + Car**

An established market leader wishes to expand his penetration of the mini-micro market by establishing Senior Salesmen to take charge of existing accounts whilst obtaining new business. A real chance to match your efforts with reward and managerial promotion after a reasonable period is well on the cards.

CW 13/4 Michael

SALES SUPPORT

London & Home Counties **To £9,000 + Car**

We have 4 MINI computer manufacturing companies with offices around the country who require people with the confidence to deal with clients in a pre- and post-sales situation. All vacancies require a programming background on minis and the jobs will provide an exciting and satisfying career. IBM or other mainframe experience is also an advantage.

CW 13/5 Michael

IBM SYSTEMS PROGRAMMERS

Midlands & Home Counties **£8,000 to £11,000**

I bet you never knew how popular you were? All you need to have is a technical IBM background with relevant IBM DOS/VSE, OS/VS or MVS experience to command a very good salary. We now have vacancies in E. LONDON, N. LONDON, N.W.1, NORTHAMPTON, HANTS, CROYDON, KENT and the CITY. Remember that good applications programmers with the right interest in the systems side would be very welcome. Several companies offer excellent perks including relocation, package, subs, mortgage, etc.

CW 13/6 Tricia

SENIOR PROGRAMMER

Wembley **£9,000**

An international manufacturing company are looking for a Senior Programmer with 3 years' experience of COBOL, including some Jackson or other Structured programming involvement. The applicant should ideally have an IBM DOS CICS background, though ICL or UNIVAC are acceptable. Team leadership qualities are essential for this position. There are excellent company benefits including a generous bonus scheme.

CW 13/7 Tricia

PROJECT LEADER

C. London **To £11,000**

A Project Leader is sought by this famous international company. The applicant will have worked for 3-4 years as an Analyst Programmer using IBM COBOL and will ideally have CICS and DL/1 experience. He/she will also have the ability to lead a major project. The company have recently installed a 4341 under DOS/VSE and will be converting to OS shortly. There are generous additional benefits, including free meals and non-CPS.

CW 13/8 Tricia

PROJECT LEADER

E. London **c. £11,000**

This well-known manufacturer requires a Project Leader with 3 years' experience of IBM PL/1 for involvement in large project systems development. The hardware is 370 under DOS/POWER/VS. Company benefits include a non-CPS. If your experience is relevant, contact us now for further details.

CW 13/9 Tricia

SENIOR SYSTEMS ANALYST

S. Herts. **To £9,000**

The above well-known commercial company requires a Senior Systems Analyst to work in their IBM installation. The applicant should have 3 years+ commercial DP background, with experience of mainframes and minis. Programming knowledge is preferable, and he/she should also have experience of client liaison. There are attractive company benefits including generous holidays, subs. cant. sports and social club, CPS and free life assurance.

CW 13/10 Tricia

BANKING & COMMERCIAL CONSULTANTS

City **£12,000-£19,000**

A major Systems House, in the CITY, has ambitious forward expansion plans requiring a number of well-qualified CONSULTANTS with a capability to program in COBOL and who would travel and work in the U.K. or abroad. At least 5 years in DP is essential plus proven in-depth experience on any major computer range of equipment. Profit sharing, BUPA, 6 weeks' hols., etc., are just some of the company benefits.

CW 13/11 Michael

UCA Recruitment Consultants **01995 3883 (01958 6138 Evenings)**

UNIVERSAL COMPUTER ASSOCIATES LIMITED Data Express House, 3 Prospect Place, Heathfield Terrace, Chiswick W.4

CROSSWORD

Solution to Prize Crossword 14

V	E	R	A	C	I	T	Y		H	A	L	L	O	W
I		O		I		B				M		O		I
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T		F		A		N				R		G		D
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E	N	S	I	G	N		S	T	A	M	P	A	C	T

ALL three winners this month work in the Civil Service. First prize of £10 goes to A. Drewry, a systems analyst with the Norwich computer centre. The winners of £5 are Richard Brown, senior executive officer in the DoI's information technology division, and John Hume, who is a programmer with the Inland Revenue's systems unit in East Kilbride, Glasgow.

Information Analysts

Openings exist within the Planning and Control Function of our Information Systems Division, to investigate specific areas of information processing within the Company. These investigations form the basis of a processing strategy which is part of an overall Company System Plan for the future.

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If you feel you have the right background, and would like to work in this systems environment, please apply for an application form from our Senior Personnel Officer, Mr. R. Edmonds-Brown on 01-368 1234 Ext. 2579, (24 hour Answer Phone Service) or in writing to: The Recruitment Department, Standard Telephones and Cables Limited, Oakleigh Road South, New Southgate, London N11 1HB quoting ref. REB 34.

STC

(4989)

Senior Data Processing Project Officer

Brussels

The Commission of the European Communities wishes to recruit a senior member of staff to work on strategic R & D planning in the field of new information technologies with a view to the formulation of a long-term Community R & D programme.

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- ability to think in strategic terms.

In addition all candidates must:

- have an excellent knowledge of one Community language, a satisfactory knowledge of another, and a knowledge of scientific-technical English.
- be nationals of a member country.
- be aged between 32 and 45. The salary and conditions of employment are in line with the importance of the post to the Commission and will be communicated to shortlisted candidates.

Please send a detailed curriculum vitae to the following address quoting reference AU/1.

Commission of the European Communities
Recruitment Division
200 Rue de la Loi, B-1049 Brussels.

The closing date for the receipt of completed applications is 21 April 1981.

The Commission of the European Communities

(4950)

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(4960)

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(5003)

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(4835)

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PLESSEY telecommunications

(4818)

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SALES BIT

Pre-call preparation

How to win credibility

DURING the last few weeks I have been writing about professional credibility.

What I want to discuss now is not the destruction, but the winning of credibility for the salesman, his company and his product, and this by and large comes from how well organised and informed the salesman can become.

To a great degree, this is a function of fluency in one's own product, the client's needs and the related sales benefits. This is unlikely to be achieved without pre-call preparation within four areas of consideration: personal organisation, sales objectives, client knowledge and product knowledge.

Way back in the Sixties when I was a trainee salesman with IBM, I was involved in a role-playing exercise in which I was the salesman making a call on a prospective buyer for a computerised accounting system. I had known for a couple of days that I was to be involved, but for a number of reasons I didn't get around to much preparation.

However, armed with all the arrogance of applied ignorance and the confidence of knowing I was fairly quick on my feet, I launched myself into the call. The buyer, alias the sales-trainer, told me about his problems, putting particular emphasis on his interest in sales invoicing. Quick as a flash I was in there with a barrage of information on the power of our system and the speed at which documentation could be produced. I really had the bit between my teeth.

It was about that time that my peripheral vision detected considerable hilarity among the audience. You see, I was the only one who had not been given details of the actual situation that the sales-call was intended to reveal. It turned out that the imaginary company manufactured battleships at the rate of three per year and despatched the same annual number of invoices to the appropriate government department. I had made myself look quite silly, simply because I had failed to prepare the call and ask the right questions. I had destroyed my personal credibility by being uninformed.

My reason for telling this story against myself is to highlight the importance of pre-call analysis and planning.

Personal organisation: Do my actions and appearance give the impression of someone who is well organised and reliable? This question usually leads to many others, such as:

- Has the appointment been confirmed?
- Have I agreed an approximate finish as well as start time for the meeting?
- Is this company actually on my sales territory?
- Which is the best way to travel there and how long will it take?
- Have all the travel arrangements been made?
- Is my car clean and free from problems with sufficient fuel for the journey?
- What is my plan for the structure of the call?
- How will I open the interview?
- Am I well prepared for the subject to be discussed?
- Am I well stocked with the basic sales literature?
- Will I need any special sales aids?
- Have I been asked to bring anything with me?
- What objections are likely to be raised and what will be the logical rebuttals?
- What unexpected events could possibly occur?
- Do I need any assistance from my sales manager?
- Does my appearance give a business-like impression?

Sales Objectives: Every sales-call must have a reason for taking place other than the obvious intention of selling something. The pre-call consideration is always the same. What is the reason for this meeting and what objectives do I intend to achieve?

This will certainly lead to a number of other questions that are unique to the individual situation in terms of the problems and opportunities that exist and the stage that negotiations have reached.

On the other hand, the deliberations could be of a more general nature: Is the person I am meeting the real decision maker, and if not, what will be my strategy for rectifying the situation?

Alan Williams

COURSES

■ USE of microcomputers for business, administrative, educational and domestic purposes is dealt with in a practical course organised by Worcester College of Higher Education. It will be based on a range of small computers including the Commodore Pet. This hands-on course should be useful to those with little or no experience of computers, and a brief introduction to the structure and operation of microcomputers will be followed by intensive instruction in Basic. Tuition fee is £120, although applicants from schools and colleges will be eligible for a subsidy of 60%. Residence will cost an extra £41. Further information from the Director of Summer School, Worcester College of Higher Education, Henwick Grove, Worces WR2 6AJ. The course take place from July August 7. Applicati should arrive no later t June 22, and should be companied by a registrat fee of £5.

PUZZLE ANSWER